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CONSTRICTIONS OF THE DUODENUM

DUE TO ABNORMAL FOLDS OF THE ANTERIOR MESOGASTRIUM

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I desire to call attention to a condition which, so far as I have been able to learn, has hitherto been undescribed. The condition to which I refer is a constriction of the duodenum at the second portion giving rise to quite distinct, if not characteristic, symptoms, and due to the remains of a definite embryologic structure. Strictures of the duodenum due to cicatricial contraction, inflammatory adhesions, etc., of course, are well-recognized conditions, but the condition to which reference is here made is of an entirely different origin. In the first case of constriction of the duodenum of this kind which came under my observation, the condition was thought to be of inflammatory origin; but more careful study of subsequent cases has shown that the condition is due to the abnormal remains of a perfectly normal embryologic structure. I have operated in six of these cases now and their histories will be related briefly.

CASE 1.—Miss N. C., aged 25, had diphtheria when 9 years old, but no other serious illness. For the past few years she had suffered from irregular and at first somewhat indefinite disturbances of the stomach. About two years before she came to me the appendix was removed under the impression that the trouble was due to a chronic appendicitis. No relief from the symptoms followed the operation. A short time thereafter she felt as if she had a small lump in the right side, just below the costal arch. She complained at times of shooting pains across the epigastric region into the right side. She had a sense of fulness of the stomach with some distress at variable intervals after eating, and occasionally a pain extending under the costal arch. Some of the attacks of pain were quite severe. The distress in the stomach after eating seemed to be quite constant, although it varied in degree; but the attacks of severe pain in the right side came on at irregular intervals. There was no history of jaundice and no vomiting during any of the attacks. A diagnosis of chronic cholecystitis was made, and as the patient's condition was interfering considerably with her work, an operation was advised.

At the operation the gall-bladder was found to be normal and free from gall-stones and adhesions. There were no evidences of present or past ulcers of the stomach or duodenum, but a distinct band of peritoneum was found, extending from the left border of the second portion of the duodenum across the duodenum on to the proximal end of the gall-bladder. The band produced a decided constriction of the duodenum at this point, and it was perfectly easy to see that any movement or distention of the duodenum would produce a drawing on the gall-bladder. While the band was not free, but was in the shape of a tense fold of peritoneum, it was thought at the time to be of inflammatory origin, and it was divided so that it could not constrict the bowel or draw on the gall-bladder. The patient made a good recovery and obtained permanent relief from her trouble.

CASE 2.—Mrs. O. B., aged 32, married, had had measles, chicken-pox and whooping-cough, and was subject to frequent attacks of tonsillitis. Menstruation was always irregular, but never painful. The patient had never been pregnant. For the past ten years she has had distress after eating with bloating and belching, and was subject to severe headaches and so-called "bilious spells." About five years ago she says she passed about 5 feet of tapeworm, after which she felt better for a time but was not free from distress after eating. About two years ago she had a sudden attack of very severe pain in the right hypochondriac region, accompanied by vomiting and followed by jaundice. Since then her attacks of distress have been more frequent. She bloats and belches a great deal, and the upper abdomen becomes distended and sore. For the past month her distress has been almost constant. She thinks that she is usually slightly jaundiced, but says that the jaundice clears up temporarily after catharsis. The pain was thought not to be severe enough for the usual gall-stone attacks, and the real significance of the distress for so many years after eating was not properly appreciated; hence the diagnosis of chronic cholecystitis, probably with adhesions, was made. The bismuth meal and the Roentgen-ray unfortunately were not used in this case.

At the operation the gall-bladder was found to be normal and free from gall-stones. A distinct fold of peritoneum was found extending from the gall-bladder across the duodenum, where it became lost in the upper layer of the transverse mesocolon. This fold constricted the duodenum at the second portion. When the gases of the stomach were forced into the duodenum, the first portion would become greatly distended, showing very clearly the constricting effect of the band or fold. The fold was divided so as to free the duodenum from constriction. The appendix was examined and was found to be free from any evidences of disease. The patient made a good recovery and has remained well.

CASE 3.—Mrs. L. R., aged 56, married, with five children, had scarlet fever at the age of 18. Ten years ago she had some operation on the uterus, probably trachelorrhaphy. For the past thirty years she has had stomach-trouble, consisting of a pain or a distress in the epigastric region after eating. The trouble has not been severe all the time, but she says that she has never been entirely free from some distress after eating, during all these years. During the past few years her trouble has increased and at times she has had attacks of quite severe pain in the right hypochondriac region, which has extended into the back, and at these times the upper abdomen has been quite tender and sore. She would have a feeling of nausea at times, but would not vomit. She has never been jaundiced. Her appetite is good but the bowels are constipated.

Examination shows a soft lax abdomen, with distinct tenderness in the region of the gall-bladder. A series of roentgenograms taken after the usual bismuth meal showed the stomach a little lower than normal in the upright position, but normal in size and outline. Peristaltic waves were normal

and there was no evidence of obstruction at the pylorus. The stomach emptied itself within the normal time-limit. The caput, or bulb, however, was quite large in circumference and much elongated, and the right end of it seemed to be fixed or drawn upward and to the right, and the right end did not move with the left end and stomach on changing from the recumbent to the upright position (Figs. 1 and 2). A diagnosis of gall-stones was made, and on account of the long, large caput with the fixed right end, a constriction of the duodenum, probably from adhesions to the gall-bladder, was suggested.

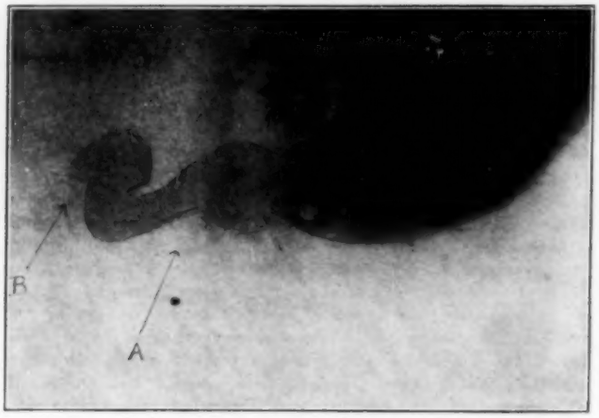

Fig. 1 (Case 1).—Patient recumbent; *A*, pylorus; *B*, fixed and constricted portion of duodenum. (In this and the following roentgenograms some of the outlines have been reenforced.)

Operation was performed Dec. 30, 1912. A median incision was made on account of the probable trouble with the duodenum. A well-defined fold or duplicature of the peritoneum was found extending from the junction of the gall-bladder with the cystic duct across the duodenum at its second portion, becoming lost in the upper layer of the transverse mesocolon. This fold was so short that it caused a well-marked constriction of the duodenum. The duodenum could be moved under the fold, showing that the fold was not really in the wall of the bowel or adherent to it. The first portion of the duodenum could be distended by pressing the gases of the stomach into it, and it was considerably enlarged. When the fold was divided, the constriction was immediately relieved. The gall-bladder was practically normal in appearance, and there were no pathologic adhesions present. There were a few gall-stones in the gall-bladder, so a small buttonhole was made through which the gall-bladder was drawn and emptied and drained, and the median incision closed. The recovery was uneventful and three months later the patient reported that she was free from all of her former pain.

CASE 4.—Mr. C. E. A., aged 51, married, with good family history, had measles at 12 and a little later what he called "bilious fever." He smokes occasionally but does not drink. Several years ago he was kicked in the abdomen by a horse. This knocked the breath out of him temporarily, but did not lay him up. His present trouble, which he refers chiefly to his stomach, he has had for many years, but he thinks that it was made worse by the kick. His chief complaint is a dull pain or a distress in the upper part of the abdomen. The distress comes on after eating, not at once, but at irregular intervals. The distress is relieved by taking some light food into the stomach. During the past six months the distress has grown worse, and at times it has increased to actual pain. He has nausea but does not vomit. When he has the pain he is quite tender in the right epigastric region. His appetite is good and his bowels regular. He has not lost much weight, but does not feel so strong as he did.

Examination showed the general physical condition to be good. The blood showed 4,520,000 reds and 9,800 whites, 68 per cent of which were polymorphonuclears, 26 per cent. small mononuclears, 4 per cent. large mononuclears and 2 per cent. eosinophils. The urine showed nothing abnormal. Stomach analysis showed good motility. The contents, removed after the usual test-meal, showed digestion well advanced. Total acidity was 75, free hydrochloric acid 41, combined hydrochloric acid 34, no blood. Following the usual bismuth-meal several roentgenograms were made with the patient in the standing as well as in the recumbent position. These plates all showed the stomach rather low when filled and the patient standing. The peristaltic waves were regular and well-marked. No irregularities or filling defects were discoverable. The caput was irregular, longer than usual, and bulged below and to the right (Fig. 3). From the long duration of the symptoms malignancy was improbable, and the findings spoke against the stomach as the seat of the trouble.

A diagnosis of constriction of the duodenum was made, and the patient was operated on, April 13, 1913. A median incision was made under nerve-blocking with novocain. The stomach was found to be normal and there were no gall-stones in the gall-bladder. There were no evidences of past or present ulcers in the stomach or duodenum. A distinct fold of peritoneum was found extending from the under surface of the liver and about the gall-bladder across the second portion of the duodenum, constricting it considerably. In addition, the tip of the gall-bladder was found attached closely to the duodenum and drawn to the left. The peritoneal fold was divided, the gall-bladder freed from the duodenum and the raw surfaces covered with peritoneum. The patient made a good recovery and was relieved from his symptoms.

CASE 5.—Mr. A. O. B., aged 43, married, manufacturer, had pleural pneumonia eleven years ago. With this exception he has enjoyed good health up to the beginning of his present trouble, which he dates back several years. During these several years he has had what he calls "indigestion"; his chief complaint has been of a dull ache or distressed feeling with a sensation of pressure in the epigastric and right hypochondriac region. The distress comes on two or three hours after eating, and it is usually relieved by eating. He has never had severe acute pain, nor does he vomit; but he is occasionally nauseated. He has sour eructations and is constantly troubled with a chronic pharyngitis. While he has remissions when he is not so bad, the general tendency has been for the condition to grow gradually worse. He is thin and spare, and under weight.

Fig. 2 (Case 1).—Same as Figure 1, with patient upright; *A*, pylorus; *B*, fixed and constricted portion of duodenum.

Examination shows the general physical condition good. Chest, extremities and nervous system are negative. There is tenderness in the epigastric region extending to the right. The stomach is not dilated, and the motility is good. Forty-five minutes after a test meal only a small amount of liquid could be recovered. Examination of the stomach contents showed a total acidity of 102, free hydrochloric acid 75, and no blood in the stomach contents. No occult blood was found in the stools. Several roentgenograms were made at different times after the usual bismuth meal. These showed a prac-

tically normal stomach with a large elongated caput, which seemed fixed at its right end (Fig. 4). A blood-count showed 4,520,000 reds, 7,200 whites, 68 per cent. polymorphonuclears, 26 per cent. small mononuclears and 6 per cent. large mononuclears. The urine was clear, amber and acid, and there were no albumin or sugar and only a trace of indican. Microscopic examination was negative. A diagnosis of constriction of the duodenum at the second portion with dilatation of the first portion was made.

Operation was performed May 1, 1913, when the abdomen was opened the stomach was found to be normal. There were

Fig. 3 (Case 4).—*A*, pylorus; *B*, constriction; *D*, peristaltic contraction of duodenum.

no signs of present or past ulcers, in either the stomach or the duodenum. The first portion of the duodenum was enlarged and could be easily ballooned up by pressing the gases of the stomach into it. A distinct, well-marked constriction of the second portion of the duodenum was found, due to a firm peritoneal band or fold, extending from below and to the left obliquely upward and to the right across the duodenum to the cystic duct, to the proximal portion of the gall-bladder and to the under surface of the liver (Fig. 5). The duodenum was so indented on the lower and left side that the opposed bulging surfaces had become adherent for from 2 to 3 cm. The duodenum was quite firmly fixed at this point, high up under the liver, and could not be drawn down. The constricting band was divided, and this freed the whole duodenum considerably. The adherent surfaces were separated and the denuded areas covered with peritoneum. The appendix was examined and found to be normal; hence it was not removed. The gall-bladder was normal and contained no gall-stones. As no other abnormal conditions were found, the abdomen was closed. The patient made a good recovery and was entirely relieved from his symptoms. By the end of two months he had gained 20 pounds in weight, and when last seen, eight months after the operation, he was perfectly well and had had no recurrence of his trouble.

In studying these cases we find not only a great similarity of symptoms, but also a similarity of findings at the operation. In all of them we find a disturbance of digestion, as evidenced by more or less distress in the epigastric region, coming on some time after eating, usually from two to three hours. The distress as a rule does not amount to a pain, although some of the patients did have at times attacks of quite sharp pain in the right epigastric or hypochondriac region. Sometimes the distress was described as a sensation of pressure in the stomach. The information was usually volunteered that the distress was relieved by the taking of food. Nausea was occasionally mentioned, but vomiting seldom occurred. Tenderness in the epigastric region was present in some degree in all of the cases. Chronicity was a distinct characteristic, the trouble often dating from early life. While the symptoms showed more or less defined intermissions during the early history, they became practically continuous after they were well established. Hyperchlorhydria was always present whenever examined for, and in Case 5 was of a very high degree. No occult blood was found in the stools.

The symptoms just described suggest very strongly duodenal ulcer, yet in none of the cases were any evidences found at the operation of present or past ulcers either in the stomach or in the duodenum. The sharp attacks of pain in the right hypochondriac region, with slight jaundice in two cases, suggested the possibility of gall-stones. Whether or not it will be possible to differentiate constrictions of the duodenum of this variety from ulcers of the duodenum by the clinical history alone remains for a wider experience to determine; but an analysis of these cases seems to show that there is an absence of the marked intermissions with bad relapses which are so common in ulcer cases. This might be expected from the permanency of the condition causing the trouble. The absence of occult blood in the stools would indicate this condition rather than ulcer.

The use of the Roentgen ray with the bismuth meal is a very valuable aid in the diagnosis. The long, large caput, showing a dilated first, and perhaps a part of the second portion of the duodenum, with a fixed point at the right of the constriction, in connection with the symptoms above mentioned, should lead one to at least strongly suspect the condition described. The difficulty in differentiating from gall-bladder trouble is shown by the symptoms which were present in two of the cases. When the constriction is well-established, the distinct continuity of the symptoms would be an important factor in the diagnosis.

In all of these cases the peritoneal fold, or duplicature, was well-marked and was undoubtedly the cause of the constriction. As the fold is certainly not of inflammatory origin, we must look to embryology for an

Fig. 4 (Case 5).—*A*, pylorus; *B*, point of constriction; *C*, dilated first portion of duodenum.

explanation of its presence. At an early period of embryonic life, when the intestinal tract is little more than a straight tube, there is an anterior as well as a posterior mesentery; but whereas the posterior mesentery extends throughout the entire length of the intestinal canal, the anterior extends caudad only so far as the proximal third of the duodenum. In that portion of the anterior mesentery which is to lie cephalad of the diaphragm are developed the heart and some of the great

blood-vessels, and is therefore called the mesocardium. That portion of the anterior mesentery which is to lie caudad of the diaphragm is called the anterior gastroduodenal mesentery, or the ventral mesogastrium. In this mesogastrium the liver is developed as an outgrowth from the ventral wall of the duodenum, as shown diagramatically in Figure 6. The caudal edge of the ventral

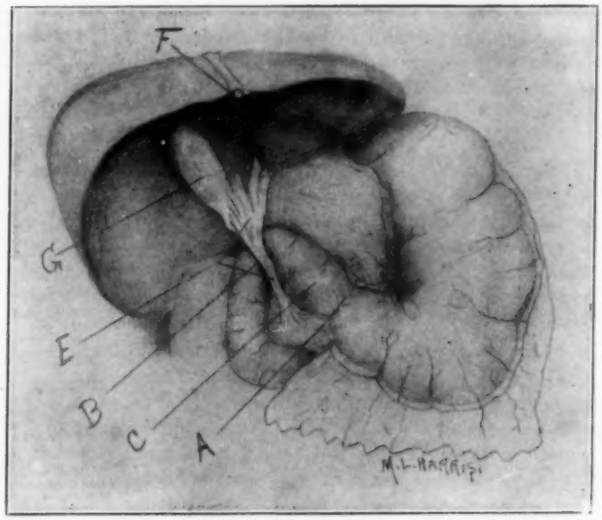

Fig. 5 (Case 5).—*A*, pylorus; *B*, point of constriction; *C*, dilated first portion of duodenum; *E*, constricting band or fold; *F*, round ligament; *G*, gall-bladder.

mesogastrium extends in an arch direction from the cephalic third of the duodenum to the umbilicus. As the liver develops, it spreads out the two layers of the mesogastrium, which eventually form the peritoneal covering of the liver, while the small remaining part which is attached to the ventral wall and to the diaphragm becomes the suspensory ligament of the liver. The umbilical vein passes from the umbilicus to the liver along the caudal edge of the ventral portion of the mesogastrium, and after fetal life these structures become the ligamentum teres.

We are interested more particularly in that portion of the mesogastrium which extends from the duodenum to the liver after this organ has become developed, and now is given the name of the hepatoduodenal ligament (Fig. 7). In this so-called ligament, which really consists of little else than the two layers of peritoneum forming the mesogastrium, there necessarily pass the hepatic, cystic and common gall-ducts, the portal vein and the hepatic artery. As the stomach rotates to the left and the liver becomes crowded to the right, the hepatoduodenal ligament draws the duodenum upward and to the right, forming the hepatic flexure, and the turning of the duodenum to the right brings the right layer of the dorsal mesentery of the duodenum in contact with the posterior parietal peritoneum. Agglutination takes place with eventual disappearance of the two layers of peritoneum in contact, and this process begins at the duodenojejunal junction and extends cephalad as far as the hepatic flexure of the duodenum or the caudal edge of the anterior mesogastrium, where the process ceases. The result of this is that that portion of the duodenum which lies caudad of the hepatoduodenal ligament is practically retroperitoneal, while the portion which corresponds to the anterior mesogastrium remains surrounded by peritoneum.

Normally, after fetal life the caudal edge of the anterior mesogastrium at its junction with the duodenum fades out and becomes imperceptibly lost in the peritoneum covering this portion of the bowel. Occasionally the transverse colon, as it crosses the duodenum in its evolution, becomes attached to the caudal edge of the mesocolon and draws it out in a fold more or less distinct, which persists and forms what is called the hepatocolic ligament. This consists of a peritoneal fold containing at times a small amount of fat between its layers, and extends, when present, usually from the gall-bladder or the cystic duct across to the transverse colon or the transverse mesocolon. Occasionally we find what was originally the left layer, but what now becomes the ventral layer of the caudal edge of the anterior mesogastrium persisting or existing as a distinct fold, extending across the ventral surface of the duodenum at the hepatic flexure and becoming lost in the peritoneum over the pancreas or in the cephalic layer of the transverse mesocolon. It was the presence of such an abnormal fold of the left (ventral) layer of the caudal edge of the anterior mesogastrium that caused the constriction of the duodenum in the cases here described.

Some of these peritoneal folds have been recognized and described, particularly by Ancel and Sencert,[1] who describe them under the name of accessory ligaments of the liver. Of these accessory ligaments, they say:

> The most important are a ligamentum cysticoduodenoepiploicum and an anterior and posterior hepatorenale. The

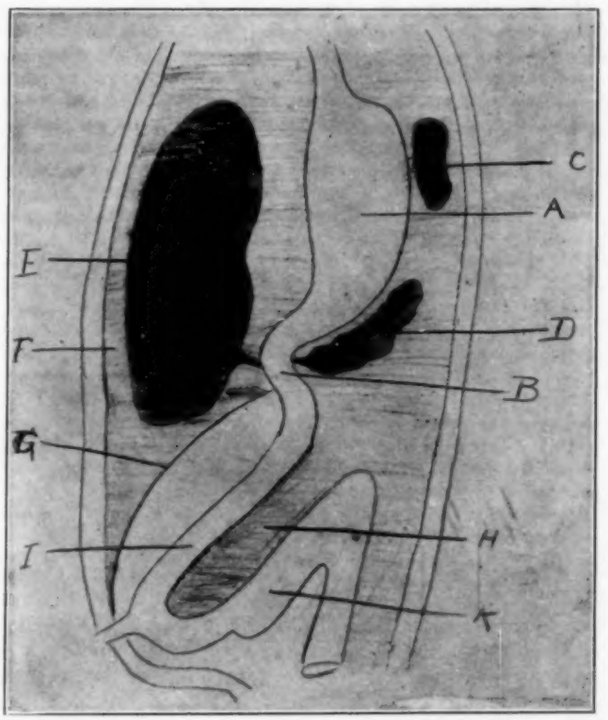

Fig. 6.—Diagrammatic representation of the development of the liver in the embryo; *A*, stomach; *B*, duodenum; *C*, spleen; *D*, pancreas; *E*, liver; *F*, anterior mesogastrium; *G*, caudal edge of anterior mesogastrium; *H*, mesentery; *I*, ilium; *K*, colon.

> first represents an extension to the right of the omentum minus and passes from the under surface of the gall-bladder in two layers, the anterior etxending to the omentum majus, while the posterior extends over the posterior surface of the duodenum on to the abdominal wall.

1. Ancel and Sencert: Neue deutsch. Chir., viii, 9.

It is evident that this is the same fold which has been described by others as the ligamentum hepatocolicum. That this ligament or fold, when present, may occasionally give rise to symptoms has been recognized by Konjetzny,[2] who says:

The practical importance and clinical significance of the ligamentum hepatocolicum lies in the fact that under certain

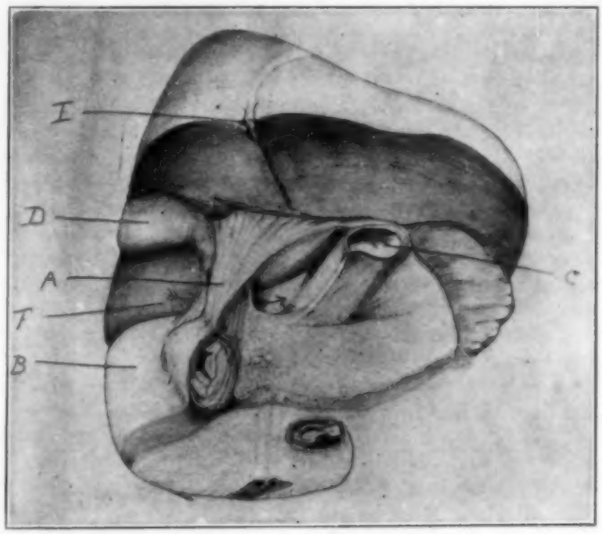

Fig. 7.—Hepatoduodenal ligament (from Huntington's Anatomy of the Peritoneum and Abdomen): *A*, ligamentum hepatoduodenale; *B*, duodenum; *C*, cardia; *D*, gall-bladder; *I*, round ligament; *F*, arrow passing through the foramen of Winslow.

conditions it may give rise to severe annoyance, simulating closely chronic cholecystitis, which may occasion operative interference. I have seen such cases. One was astonished at the operation to find in place of the expected inflamed gall-bladder containing stones, a perfectly normal bladder containing clear bacteria-free bile. The only abnormal condition present was a broad peritoneal duplicature extending from the transverse colon to the gall-bladder, which, however, did not show a trace of inflammatory changes. Division of this fold brought relief from the suffering. Naturally this ligament, as a result of pure mechanical influences (pulling and tension through the drawing effect of the transverse colon) can become secondarily indurated, as is occasionally found elsewhere in the peritoneum or mesentery without a real bacterial infection being assumed. The clinical symptoms caused by this fold are without doubt to be ascribed to the drawing effect of the transverse colon, which is specially marked when it is filled. In that manner the drawing on the gall-bladder is produced, and under certain conditions from time to time a kinking of the neck of the gall-bladder or of the cystic duct, with the damming up of the contents of the bladder. Under such conditions a thickening of the wall of the gall-bladder, without inflammatory changes and the formation of pure cholesterin stones, may occur.

It will be remembered that in two of my cases, symptoms referable to the gall-bladder were present, but at the operation the gall-bladder was found to be normal and free from gall-stones. I have not found described in the literature cases of constriction of the duodenum due to abnormal remains of the caudal edge of the ventral mesogastrium, but since recognizing the condition in these five cases, I am convinced that they are not so rare, and now that they are known a more careful examination of patients suffering from chronic distress in the upper abdomen with hyperchlorhydria, etc., will lead to their recognition and proper treatment. Division of the folds, thus relieving the constriction of the duodenum, brought complete relief in all of my cases after many years of suffering.

Since the foregoing was written, operation has been performed in a sixth case showing a remarkable constriction of the duodenum.

CASE 6.—P. G., aged 55, at 20 years of age had what the doctors called chronic diarrhea, which is said to have developed into chills and fever. The condition lasted for a year. When about 26 years old he began to have trouble with his stomach. He would have eructations of gas, often foul-smelling, with tympanites and constipation, but no nausea or vomiting. For twenty years he had a variable amount of stomach trouble of this character, when in 1908 he had the first severe attack characterized by pain in the epigastric region. The attack laid him up for five days and he was unable to work for two weeks. The condition was diagnosed acute gastritis. He had a similar severe attack in 1912 and two in 1913. All of the attacks were similar in character. The pain, which was of sudden onset, was located in the right epigastric region and would last two or three days. It was frequently so severe as to require morphin for relief. There was no vomiting. During this time he consulted several doctors and a diagnosis of gall-stones was made by all of them. A roentgenogram was taken which is said not to have shown any gall-stones. The blood, urine and stools had been examined, with negative results. He is said to have had a coated tongue and a foul breath at all times.

He was seen by me in consultation with Dr. George J. Aste, and operated on Jan. 7, 1914. It is to be regretted that we were unable to obtain roentgenograms after the bismuth meal in this case; but a duodenal constriction was suspected and a median incision was made in the epigastric region. A very well-defined, broad peritoneal fold was found, extending from the proximal end of the gall-bladder and the under-surface of the liver across the cystic duct and the duodenum, becoming lost in the root of the cephalic layer of the transverse mesocolon. The fold was adherent to the duodenum, and beneath the broad fold the duodenum showed two distinct kinks, as

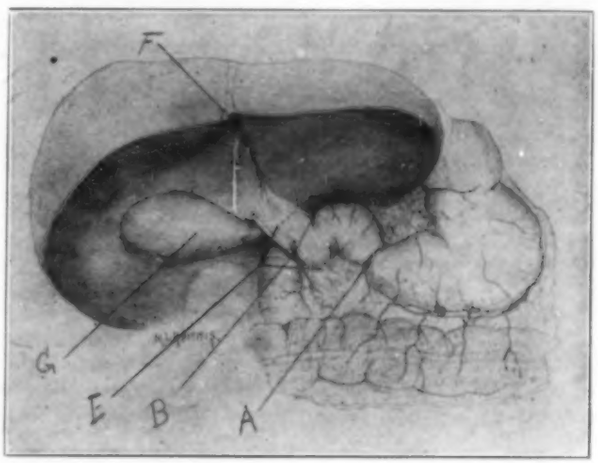

Fig. 8 (Case 6).—*A*, pylorus; *B*, constrictions (two) of the duodenum; *E*, constricting band or fold; *F*, round ligament; *G*, gall-bladder.

shown in Figure 8. The opposed surfaces of the duodenum at the kinks were adherent. The fold was divided and the duodenum freed. In freeing the duodenum an area of denuded surface remained. This denuded area was covered by a detached peritoneal graft taken from the omentum. The graft was stitched in place with fine catgut sutures. The patient recovered from the operation, but of course it is too early to say anything about the end-result.

25 East Washington Street.

2. Konjetzny: Neue deutsch. Chir., viii, 8.

THE TREATMENT OF ACUTE OSTEOMYELITIS OF THE LONG BONES BY MEANS OF THE DENTAL ENGINE AND A LARGE BURR

PRELIMINARY REPORT

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The management of acute and chronic osteomyelitis of the long bones is anything but a source of pride to the science of surgery. The crude weapons of attack in the shape of the mallet and chisel really belong to the stone age of surgery. In the hands of the most expert they cause excessive trauma, frequently damage important structures and rarely eradicate all the diseased tissue. The highly specialized structures of bone, namely, the haversian systems, compact and cancellous tissue and the peculiar arrangement of the blood-supply of the long bones, as demonstrated by Lexer, make the attainment of sterilization in an old infected bone cavity so hopeless a task that it is frequently surrendered as futile.

Regeneration of bone in a case of acute osteomyelitis treated by means of the dental engine and a large burr.

The advancement in the treatment of chronic infections in other tissues caused by the so-called pus-producing micro-organisms, by both local and systemic methods, should make us feel that sterilization of an osseous cavity is as much a possibility for the surgeon as is the attainment of asepsis in a carious tooth for the dentist. It must be acknowledged by all who have had experience in the treatment of fractures of the jaw that the exact methods and beautiful technic employed by the average dentist in the treatment of this condition frequently make the efforts of an otherwise skilful surgeon appear crude and bungling. The attainment of absolute asepsis in badly decayed and infected teeth is a matter of every-day occurrence to the dentist. Ought not then the sterilization of the medullary cavities of the long bones to be within the range of possibility, if the right technic were used?

With this idea in mind, I have treated a series of cases of chronic osteomyelitis of the long bones at Cook County Hospital by the following method: Preparation of skin by shaving and painting with a solution composed of glycerin, one part, iodin, two parts; long skin incision over shaft of bone; separation of soft tissues and periosteum overlying infected cavity; opening medulla by trephine, drill or chisel; enlargement of cavity. This may be done, either by chisel and mallet, or by the large burr attached to a dental engine driven by the regular electric current. With a large burr a considerable portion of the shaft of a long bone can be removed in a very short time. A stream of hot antiseptic solution should be played on the burr continuously, while it is in use, to clear the field of débris and to facilitate the action of the burr. The rapidly revolving burr is applied to the medullary surface of the bone and pressure made from within outward precisely as the dentist does in drilling out a tooth. This procedure should be continued until every portion of suspicious bone has been removed and the remaining surface is smooth and even, without any projecting spicules or ragged edges, such as usually remain after the use of the chisel.

The operator readily acquires the ability to decide when the burr is drilling out diseased or normal bone, because of the greater resistance offered by the healthy osseous tissue. Because of the ease with which the burr is manipulated, the operator may safely venture into areas which would be very dangerous if the chisel and mallet were used. The risk of fracturing the long bones is reduced to a minimum because the element of violent trauma has been removed. Thus, by the use of the burr, a hazardous, violent and crude procedure is transformed into a comparatively safe operation with a definite and precise technic.

Experimental work must determine what changes are produced on the drilled surface of the bone different from those produced by the chisel. Do the heat and friction generated by the rapidly revolving burr kill the pus-producing micro-organisms? It has been shown by cultures made from the inner surface of machinery belting that mechanical influence may produce an effective bactericidal action, as the cultures made from the belting of machinery in constant use were sterile.

The following case illustrates the results obtainable by the cleaning out of the medullary cavity of infected bone with the large burr.

Patient.—J. M., aged 42, machinist, in February, 1913, complained of an ache in right forearm extending from elbow to wrist. Patient consulted physician, who treated him for chronic rheumatism. The forearm began to swell and the patient was referred to a surgeon, who made an incision over the ulna for about three-fourths of its length. Nothing was done to the bone. The swelling was enormous and the pain intense. The patient was told that nothing more could be done for him, and he applied for admission at Cook County Hospital. His temperature was 101°, pulse 120, leukocyte count 20,000. Roentgen ray showed entire destruction of the upper end of bone, including the olecranon process, together with involvement of the entire shaft of the bone. Quantities of thick, yellow pus were discharged from three sinuses leading down to the bone. Amputation seemed inevitable. As it was

the patient's right arm, however, an attempt was made to remove the necrotic and diseased tissue. With ether anesthesia the ulna was exposed throughout its whole extent. The soft tissues were retracted and the olecranon process and upper end of bone entirely removed subperiosteally. The remainder of the shaft was drilled out with a small dental burr, the larger ones not having been made at that time. All necrotic tissue was removed and a smooth, clean, hard bed of bone remained. This was filled with bone wax and the soft tissues sutured without drain.

The man now has good extension of his forearm, in spite of absence of the olecranon process, and a strong grip in his hand and is able to work.

32 North State Street.

THREE CASES OF WIRING WITH ELECTROLYSIS FOR AORTIC ANEURYSM

ONE HERETOFORE IN PART REPORTED *

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PHILADELPHIA

I wish to report three additional cases of wiring with electrolysis for aneurysm of the thoracic aorta, in one of which (Case 2) the patient illustrates the beneficial effects of this procedure more than four years after the first operation and more than two years after the second wiring, which was resorted to because he had a return of very severe pain and a marked bulging near the site of the original sac.

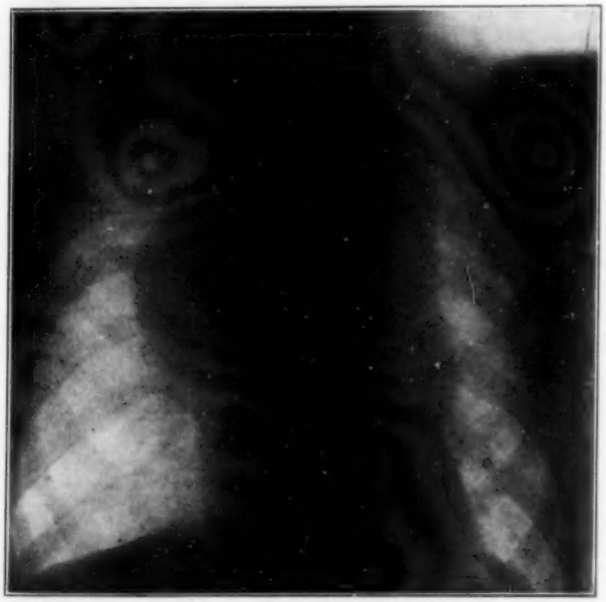

Fig. 1.—Enormous aneurysm of ascending arch (Case 1) before wiring.

CASE 1.—A man, aged 55, had a large pulsating growth in the upper zone of the right chest, anteriorly, which extended from the second rib in the midclavicular line to the fifth rib (Figs. 1 and 2). The growth did not point, in the sense that it presented a spot which was elevated above the rest of the swelling, but in the center there was a spot where expansile pulsation was marked and the tissues very soft and tender on palpation. The chief symptoms consisted in severe pain and dyspnea.

* Read before the College of Physicians of Philadelphia, March 3, 1914.

The record of the operation is as follows:

1:15 p. m., Feb. 22, 1912: 5 milliamperes.
1:19: 10 milliamperes.
1:23: 15 milliamperes.
1:27: 20 milliamperes.
1:28: Wire broke close to needle.
1:29: 5 milliamperes.
1:32: 10 milliamperes.
1:33: 15 milliamperes.
1:34: 20 milliamperes.
1:35: 25 milliamperes.

Fig. 2.—Same case of large aneurysm as that shown in Figure 1, wired Feb. 22, 1912; wire coiled in aneurysm, which is lessened in size one week after operation; the patient returned to work and was killed ten months later while walking on the railroad.

1:36: 30 milliamperes.
1:37: 35 milliamperes.
1:41: 40 milliamperes.
1:44: 45 milliamperes.
1:49: 50 milliamperes; maximum amperage, maintained for one minute.
2:00: 45 milliamperes.
2:00:30: 40 milliamperes.
2:01: 35 milliamperes.
2:01:30: 30 milliamperes.
2:02: 25 milliamperes.
2:02:30: 20 milliamperes.
2:03: 15 milliamperes.
2:03:30: 10 milliamperes.
2:04: 5 milliamperes.
2:05: Discontinued.

Insertion of needle at 1:01 p. m.
Insertion of wire begun at 1:03 p. m.
Current started at 1:15 p. m. and discontinued at 2:05 p. m.
Length of operation, one hour and four minutes.

The patient, notwithstanding the fact that his circulatory state was somewhat excited by the performance and interruption of the operation, whereby the pressure in the sac was increased, stated when the current had passed for twenty minutes that his chest felt more comfortable and that he had less pain. Twenty-four hours later he had great hoarseness so that he could speak only in a whisper and he developed signs of pulmonary congestion at the base of the right lung, which cleared up in forty-eight hours under the use of full doses of atropin. The hoarseness gradually decreased, and when he returned home four weeks later had almost disappeared. More than three months later the patient wrote that he was "getting along very well" and "feeling pretty well."

Again, July 10, 1912, he wrote: "I am able to talk pretty well, but get husky when doing very much talking."

In October, 1912, eight months after wiring, this patient came from his home in Johnstown to Altoona, hearing that I would be in the latter town, and stated, after walking about a mile up a steep grade from the station, that he had come to show how well he was. He then walked back to the station without distress. Eleven months after the operation, while walking along the railroad track, he was struck and killed by a train backing down on him.

Fig. 3.—Upper wire put in by Dr. Beardsley in November, 1909, and lower wire introduced by the author in February, 1912, extending down the aorta because it did not coil as gold wire does; patient (Case 2) alive and well.

It will be seen that thirteen minutes after the current was turned on there is a note that the wire broke off. On examining the end of the hollow needle I found that there was a green fluid like verdigris. Fortunately, I was able to push the end of the wire, past that already in the needle, into the sac and continue the procedure, starting the current again at 5 milliamperes.

As this was the second operation in which this untoward accident occurred, I investigated the matter and found that the alloy mixed with the gold was copper and that the copper had been eaten out by the current, proving that a wire made with gold and copper is an unsafe wire because it might be impossible or inadvisable to get more wire in and, if the break occurred after the clot formed in the needle, the further use of electricity would be impossible, although it is absolutely essential to success. At my request, one of the experts of the Philadelphia Electric Company was kind enough to undertake a series of experiments to determine the changes in different kinds of gold wire and silver wire produced by electrolysis, using the same strength of current that I employed clinically, and employing normal salt solution to represent the tonicity of the blood. His results were as follows:

Electrolyte.—This consisted of saline solution having 1 teaspoonful of salt to 1 pint of water.

Electrodes.—The positive electrode was the sample wire to be tested. The negative consisted of copper wire.

Current Used.—A current of 50 milliamperes was allowed to pass for one hour.

RESULTS OF TEST

Sample	Weight Before mg.	Weight After mg.	Change in Weight
Yellow gold	100	97	3 per cent. decrease
Red gold	259.1	160	38 per cent. decrease
Silver	283	298.1	5 per cent. decrease

The yellow gold wire was practically the same after the test as before, its physical appearance being the same.

The red gold wire became very brittle after the test and changed to a blackish color.

The silver wire took a grayish-blue deposit, and was as flexible as it was before the test.

The saline solution in each case became somewhat of a greenish color.

Chemical analysis of the solution and of the deposits on the wire was not made.

The fact that copper was used for the negative electrode may be partly the cause for the greenish color of the solution. It was unfortunate that platinum wire was not used for the negative electrode. Although this test was rough and approximate, the results give very interesting information as to the kind of wire to be used.

CASE 2.—The patient is an intelligent colored man, aged 61, who appears hale and hearty. He was first wired when in the service of Dr. Rhoads by my chief of clinic, Dr. Beardsley, Nov. 1, 1909, four years and four months ago, for a large growth of the descending arch, pointing anteriorly, and wired a second time by me Feb. 23, 1912, more than two years ago, since which time he has been to his home in New York State near Albany. After his first operation he worked hard and on one occasion visited friends by walking 60 miles. A report of this case, after the first operation, was published by Dr. Beardsley.[1] Aside from the patient's being practically well so far as pain and dyspnea are concerned, the case is interesting in that it is the only one in which I have employed silver wire, using silver wire because I had used all the gold wire I could obtain on the previous day in the case just

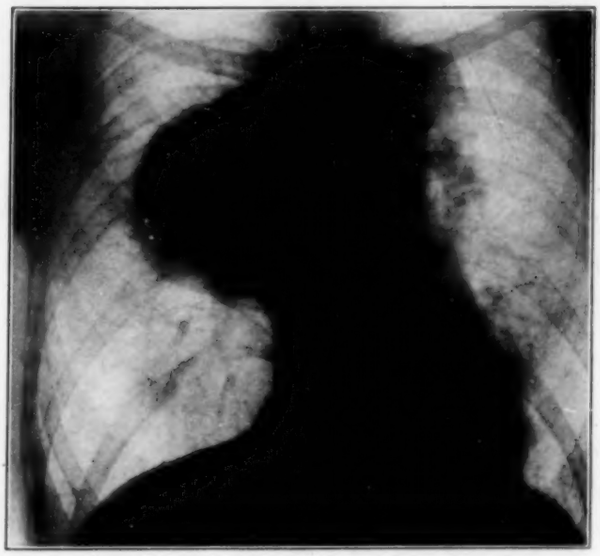

Fig. 4.—Large aneurysm of ascending arch (Case 3) wired July 13, 1912; wire coiled in sac and extending all the way from right to left; roentgenogram taken one week later.

1. Beardsley, E. J. G.: Symptomatic Relief in Aortic Aneurysm by Wiring and Galvanism (Moore-Conradi Method), Therap. Gaz., March 15, 1911, p. 156.

reported. This man's symptoms were so urgent as to pain, dyspnea and the appearance of the aneurysm, which looked as if it was about to burst, that I felt justified in using silver wire, but I never shall do so again because his survival is most remarkable. The silver wire, having no spring, did not coil, and therefore extended itself far beyond the sac, and the roentgenogram (Fig. 3) shows that it not only entered the aneurysm, but passed not once but several times up and down the aorta as low as the diaphragm. The plate shows this better than the photograph. Why the process of coagulation which closed the sac did not also close the aorta I do not know, but some of the wire certainly went far afield from where I intended it to go. Figure 3 shows the wire placed in the sac in 1909 by Dr. Beardsley above the silver wire which I introduced Feb. 23, 1912. Since that time the patient has been up and about and in excellent condition, with little or no pain except on active exercise.

CASE 3.—This patient presented a large aneurysm of the ascending arch as shown in Figure 4. The roentgenoscopic report made by Dr. Manges was as follows:

"Mr. ——— has a large sacculated aneurysm involving all of the transverse arch and the latter part of the ascending arch. The apex of the sac lies in close relation with the anterior chest wall on a level with the second interspace and about the midclavicular line. There is a considerable space between the posterior surface of the sac and the posterior chest wall, on the right side. On the left side, however, the sac approaches more nearly the posterior wall than the anterior, although it is not in close relation with either. There is no evidence of erosion of the ribs as far as I am able to determine, but the aneurysmal sac completely obscures a portion of the chest wall."

The patient suffered from agonizing pain and urgent dyspnea with incessant cough, and could lie without strangling only on the left side. The record of the operation is as follows:

12:51 p. m., July 13, 1912: Needle inserted.
1:07: Current turned on.
1:07-1:12: 8 milliamperes.
1:12:1:17: 20 milliamperes.
1:17:1:22: 30 milliamperes.
1:22:1:37: 40 milliamperes.
1:27:1:32: 50 milliamperes.
1:32:1:47: 60 milliamperes.
1:47:1:48: 50 milliamperes.
1:48:1:49: 40 milliamperes.
1:49:1:50: 30 milliamperes.
1:50:1:51: 20 milliamperes.
1:51:1:52: 10 milliamperes.
Current turned off at 1:52 p. m.

The patient was in a desperate state, but within two days after operation he could lie on his back and right side with comfort. He had been unable to lie on the right side without great dyspnea and cyanosis for weeks. Cough had been most excessive.

Two months after operation he wrote from his home in Pittsburgh, Pa., that he had been out of the house only once and often had great pain in his heart and chest and all over the body and limbs. Ten months after the operation he wrote as follows:

"I am not getting very strong since the operation and have been able to do but very little work; don't seem to get any strength in my limbs; can lie in only one position and that is on my left side. Neither can I recline in a chair, as the pressure on my back starts me to coughing. It also hurts to raise my right arm and makes me cough when I attempt it. My muscles or nerves all over my body seem to be sore. The pains in my aneurysm have not occurred very frequently, but I have had several severe pains around my heart. My appetite is very good and I am almost back to my normal weight. I get very short of breath from the least little exertion or from talking; do not rest very well at nights and do a great deal of coughing in the mornings."

This patient died Dec. 24, 1913, seventeen months after the operation.

In an article previously published by me,[2] in which I reported a number of cases of this character, I reached the following conclusions:

1. The fact that no accident has occurred in any of the twenty-two (now twenty-five) operations I have performed leads me to believe that this seemingly radical operation is not a dangerous one, the more so as I have no knowledge of any accident having taken place when the operation was *properly* performed by others. In one reported case an attempt to wire a fusion aneurysm of the carotid artery resulted almost immediately in hemiplegia, and in another unreported case the mistake of using the negative pole in the growth loosened the clot already present and caused multiple emboli.

2. The operation is the only one that offers material hope of prolonging life, this having been prolonged in one case at least five years.

3. It is justified by the prompt relief of pain which nearly always ensues and lasts, unless the growth, extending in another direction, creates a new source of pain.

4. The diagnosis of saccular aneurysm should always be confirmed by Roentgen-ray examination, as this operation is contra-indicated in fusiform aneurysm for obvious reasons.

5. Great care is absolutely necessary that properly prepared wire be employed.

To these conclusions I would now add that, after having performed this operation twenty-five times, I can see no reason for changing the views then expressed, but I desire to emphasize once more the fact that only specially prepared wire can be used and that silver wire, because it does not coil, is an unsuitable agent.

It has been stated that this operation is useless, because the nature of the lesion is such that cure cannot be effected. If by cure is meant the total disappearance of all signs of the disease there is, of course, no cure; but if by "cure" we mean relief from agonizing pain, diminution in the size of the growth, clearing up of distressing pressure symptoms and prolongation of life when death seems very imminent, then the operation is justified, the more so as it seems to be of little danger. Patient 2 had a very marked bulging mass which is described as being as large as an orange. Inspection now fails to show any such mass. I have yet to see a patient who did not receive at least temporary and marked benefit from wiring and electrolysis.

This operation, like all other operations, largely depends for its success on how it is done. If too much current is used, serious damage and necrosis of tissues may be induced, and I am led to believe that in several cases which have not been reported by others such an error in technic has led to bad results. Thus in several of these patients I am told the current was so strong that the wire "burnt off." Such a current cooks the aneurysm. If the street current is used it is necessary not only that the table on which the patient lies should be insulated, but also that the operator wear thick, rubber-soled shoes and stand on a perfectly dry floor.

1801 Spruce Street.

2. Hare, H. A.: The Treatment of Sacculated Aneurysm by Wiring and Electrolysis, THE JOURNAL A. M. A., April 13, 1912, p. 1088.

Social Causes of Disease.—The cause of most epidemic diseases are not individual but social; we must therefore protect one another; there is not a survival of the fittest but a survival of the best protected.

SOME NOTES ON HAY-FEVER*

HENRY L. ULRICH, M.D.
MINNEAPOLIS

The practitioner does not give hay-fever the attention it deserves. There is a growing conviction not only that hay-fever is a local manifestation, but also that it involves general reactions which bring it into the domain of constitutional diseases.

Those who are interested should read the article by Dunbar,[1] who reveals the whole subject from a historical, etiologic and therapeutic point of view. It is the last word of a master mind, familiar with every detail of the gradual growth of a clinical entity to a more rational and scientific basis.

Blakely,[2] in 1873, was the first to demonstrate the relationship between the pollen of grasses and the disease. These experiments with pollen are most interesting. He collected pollen on glass plates wet with glycerin, proving that pollen was wind-borne. He produced asthma and hay-fever symptoms by inhaling the pollen. He also produced skin reactions, erythemas, by rubbing pollen in scarified areas in the arms and legs. With the rise of bacteriology, Blakely's observations were overshadowed by theories of bacterial origin. From his time to that of Dunbar's communication in 1902-1903, the writings on the etiology of hay-fever offer one of the most weird and fantastic chapters in medicine.

We owe to Dunbar the establishment of the true etiologic basis, namely, that it is a pollen toxicosis. This, in passing, has led Dr. Frank Todd[3] to coin the apt term of "pollenosis" as a fitting name for the disease. Dunbar was able to demonstrate in the blood of hay-fever patients and in experimental animals immune bodies such as amboceptors, precipitins and antitoxins.

By injecting pollen toxin into horses he produced what he thinks is an immune serum which neutralizes the pollen extracts on the mucous membrane or in the test-tube. Since 1903 he has put on the market this antitoxin, called by its trade-name, pollantin. This can be obtained in liquid or dry state. I feel safe in saying that the practical results of this serum have not come up to expectations. Dunbar's explanations for this are that (1) patients do not use the antitoxin early enough — that is, prophylactically, and (2) patients do not use it correctly during the course of the disease. Ten years ago, pollantin was hailed as the real treatment for hay-fever. To-day it is drifting dangerously near the thousands of derelict "cures" for which this disease is so justly famed.

Noon[4] and Freeman,[5] in 1911, working in Wright's laboratory, attempted active immunity in contradistinction to the passive immunity of Dunbar. They injected small quantities of pollen extract, judging their dosage entirely by the conjunctival reaction. An arbitrary unit of reaction was chosen. This unit represented the amount of extract from 0.001 mg. of pollen. Their injections were made at intervals of three or four days. Later in the case, ten-day intervals were used. According to their conjunctival test they were enabled to increase the resistance usually ten times — in one case 250 times.

Altogether, they report twenty-nine cases. Some of these were treated out of season, some during hay-fever season and during the attacks. Of the latter, the highest increase of resistance is ten times the initial units of sensibility. Noon and Freeman's work marks a distinct advance in hay-fever therapy.

Clowes[6] of Buffalo was the first in this country to demonstrate immune bodies — amboceptors and precipitins — in patients suffering with our type of hay-fever. He, too, made experiments with patients out of season, using extremely small doses, 1 c.c. of from 1:5,000,000 to 1:500,000 solutions. These were given at intervals of from two to six days. The number of doses ranged from three to fifteen. His unit of resistance was a solution containing the extracts of 1:20,000,000 gm. of pollen. This is twenty times as dilute as Noon and Freeman's unit. Clowes was able to raise the initial resistance a thousand times. He notes, however, that five months later the resistances had lapsed nearly to the original level.

In the meantime there has been a growing impression that the manifestations of hay-fever are of an anaphylactic nature. Weichert,[7] Wolff-Eisner,[8] Auer[9] and a host of others have expressed themselves along this line. Karasawa[10] was able to produce anaphylaxis with extracts of beans, peas, lentils, rice, sago and wheat. Dunbar[11] himself has studied anaphylaxis produced by male sperm-cells in lower animals.

The argument that hay-fever is possibly a hypersensibility to a foreign protein is no more illogical than the argument that the edemas and eruptions following serum injections are evidences of hypersensibility. Other clinical phenomena such as renal and infectious asthma, spasmophilia and pyloric spasms are examples of similar reactions. According to this theory the proteins of the pollen grains, falling on a diseased mucous membrane, are absorbed by the blood, in which parenteral digestion takes place. These reduction products, by means of a selective action on certain nerve-cell groups, particularly the autonomous centers, produce the irritability in these centers which manifests itself through the erectile tissue in congestion of the nose, in asthma, and, spreading over motor areas, induce general nervous excitation. The local irritability, including itching and burning as well as destruction of mucous membrane (Arthus phenomenon) are truly local manifestations of hypersensibility just as the skin and conjunctival reaction in tuberculosis is a similar phenomenon.

To review the symptoms I quote Bostock's 1819 classic clinical description[12] of an attack of hay-fever:

> When the season approaches the hay-fever patient experiences at first an occasional itching at the inner canthus of the eye, at the caruncle. This itching appears, soon disappears, and may in a few days again assert itself. This time it may be somewhat more annoying and there is seen a definite reddening of the caruncle, perhaps also of the adjacent conjunctiva. Then there occur mild and infrequent attacks of sneezing. Suddenly the condition gets worse. Perhaps

* Read before the Hennepin County Medical Society, November, 1913.

1. Dunbar, W. P.: The Present State of Our Knowledge Concerning Hay Fever, Ann. Otol., Rhinol. and Laryngol., 1912, xxi, 277.
2. Blakely: Referred to by Dunbar (Footnote 1).
3. Todd, Frank: Jour. Minnesota State Med. Assn., 1908, p. 323.
4. Noon, L.: Prophylactic Inoculation against Hay-Fever, Lancet, London, 1911, i, 1572.
5. Freeman, J.: Further Observation on the Treatment of Hay-Fever by Hypodermic Inoculations of Pollen Vaccine, Lancet, London, 1911, ii, 814.
6. Clowes: Proc. Soc. Exper. Biol. and Med., 1913, x, 69.
7. Weichert: Wien. klin. Wchnschr., 1904, p. 407.
8. Wolff-Eisner: Das Heufieber, München, 1906.
9. Auer: Pop. Sc. Month., 1912, p. 434.
10. Karasawa: Ztschr. g. Immunitätsforsch. u. exper. Therap., Orig., 1910, v, 509.
11. Dunbar, W. P.: Ztschr. f. Immunitätsforsch. u. exper. Therap., 1910, vii, 454.
12. Quoted by Dunbar (Footnote 1).

while taking a walk on a warm sunny day the patient has paroxysmal attacks of sneezing which interfere with his respiration. The eyes itch fiercely, the conjunctiva becomes red as fire and edematous. The patient can no longer breathe through his nose; the mucous lining of the mouth begins to itch, especially the gums. There follows a condition of malaise and general weakness which may become so marked that the patient must take to his bed. He is very depressed, robbed of all his energy, and loses the joy of living. In some cases asthmatic symptoms appear so that during the night the patient cannot rest. Finally many patients suffer with an unbearable itching of the skin. All symptoms may disappear for several days, the patient seems to be well, only to have the symptoms reappear again.

This mysterious changeable condition lasts, as a rule, six weeks and then gradually disappears. The attacks become lighter and more infrequent, resemble those of the onset, and gradually disappear altogether.

This descriptive narrative appears to us rather mild in comparison with our autumnal catarrh. Our catarrh exhibits more severe symptoms, such as extreme irritability of autonomous centers, mainly the nasoglossopharyngeal and vagus groups. This often overspreads the motor areas, giving rise to marked asthenia. Whether some of these manifestations are genetically of local or central origin remains to be seen. That there is a dual origin is more likely. At any rate the nervous irritability seems to be more pronounced in autumnal catarrh. Dunbar speaks of thousands of cases he has seen in which there has never been fever. Clowes mentions rise of temperature in his cases, and I have found one case with fever. There is no doubt that rise of temperature would be found a common symptom if systematically looked for.

I review the clinical picture to call attention to the fact that no known infectious process expresses itself in symptoms of this nature. They are entirely too spasmodic, irregular, bizarre, for the well-ordered mechanism of the ebb and flow of immunity which controls infectious processes. The irregularity of time, sequence and intensity suggests still more the hypersensibility of nerve and tissue groups to an irregular protein intoxication, the portal of entry of which is the nose.

For two years I have been observing ragweed. I have confined myself to ragweed because I find that it is the only flowering plant which has a wind-borne pollen during the period between July 1 and September 15. I speedily dismissed the idea of goldenrod as a causative factor in hay-fever, simply because its pollen is not wind-borne. Indeed, it is difficult to remove the pollen from goldenrod blossoms except by most energetic shaking. To collect ragweed pollen, one must be up early, before the sun has had time to warm up the air held in the oily envelope of the pollen grain, for it is by reason of this air and its light weight that the pollen grain is lifted to its aerial flight. Many times after 9 in the morning it was impossible to find pollen on plants in exposed places. The production of pollen from ragweed is most prodigious. Daily for weeks I have been able to dust pollen off flowers in the same bush, even from the same cluster.

I am convinced that ragweed pollen is constantly in the atmosphere of the countryside and the city. Pollen grains could be found daily in receptacles containing water placed in window-sills or outdoors. Liefmann,[12] in the heart of Hamburg during the height of the hay-fever season, collected 250 pollen grains to the square centimeter during twenty-four hours. He estimated by means of an aeroscope that in the middle of a large city there were 308 grains to 1 cubic meter of air. In the neighborhood of a rye-field, one inhales with each breath two or three pollen-grains. Kammann[12] estimated that 20,000,000 pollen grains weighed 1 gm. I have estimated that 1 gm. of ragweed pollen contains 172,800,000 grains.

TABLE OF CASES TREATED WITH POLLEN TOXIN

No.	Name	History	No. of Treatments	Remarks	Results
1.	E. A. B....	Turbinates removed in Feb. Inflammation of nose ever since. Hay-fever of 4 weeks' standing.	5	.....	Considerable improvement.
2.	Dr. H.F....	T. B. Deviated septum. Hypertrophy of turbinates of left side.	5	Took toxin with him when he left city. Under observation 5 days. Have not heard from him.	Very much improved.
3.	W. J. M....	Hay-fever many years.	8	.....	Much improved.
4.	M. K.....	Hay-fever many years.	6	.....	Satisfactory.
5.	Mrs. B.....	Hay-fever 4 yrs. Bronchitis in the winter; wheezing.	7	Much improved at first. Exacerbation Sept. 1; last treatment Sept. 12. Experienced great and permanent relief.	Very satisfactory.
6.	Mrs. A.....	Bronchial asthma with exacerbations at hay-fever time and hay-fever.	7	Last 2 weeks autogenous vaccine from bronchial sputum. No relief from asthma.	Nose and eye symptoms rel'ved. Asthma not relieved.
7.	Dr. J. D. W.	Hay-fever many years.	7	Steady improvement.	Satisfactory.
8.	Miss B.....	Hay-fever 10 yrs.; subject to nasal and sinus infection.	18	Also pneumococcus vaccine therapy for sinusitis. Some eosinophils; 4.5%.	Satisfactory.
9.	Dr. W. T...	Hay-fever very severe.	5	.....	Very satisfactory.
10.	Dr. B.....	Hay-fever first year.	1	Immunity for 1 week; slight attack following this immunity. Very comfortable ever since.	Satisfactory.
11.	Dr. H. S...	Hay-fever for many years; getting lighter of late.	3	.....	Doubtful.
12.	Dr. J. P....	Hay-fever for years.	2	Refuses treatment for fear of anaphylaxis.	Unsatisfactory.

My extracts were obtained by means of Dunbar's method, which consists in making a 5 per cent. suspension of pollen in distilled water or normal salt, and alternately freezing and thawing the mixture. Clowes' method of removing the oily envelope with acetone and then extracting is an excellent modification. This extract, according to Kammann,[13] contains several proteins. By fractional methods of separation he finds three, two types of globulins and an albumin. The latter is the toxic agent, as far as local action is concerned.

With these extracts I have treated twelve cases of hay-fever during the last season. Subcutaneous injections of very dilute extracts were given at intervals of one, two and three days. The usual dose was 0.5 c.c. of a dilution, never greater than 1:500,000 nor less than 1:1,000,000. The latter is a more satisfactory and safer dose. I soon found that the conjunctival test for adjudicating the dosage was impracticable. The patients came in all stages of conjunctival inflammation. To attempt to get reactions in a red and swollen surface

13. Kammann: Beitr. z. chem. Physiol. u. Path., 1904, v, 346.

was futile. I therefore confined myself to the subjective findings at the time of treatment (see the tabulated report).

The most striking features of this experiment, measured purely from clinical results, were: 1. The patients in the majority of instances were relieved partially or wholly from symptoms in from fifteen minutes to two hours. This relief lasted some times a few hours, again for days (one week is the longest). 2. There was a gradual improvement of symptoms in the majority of cases which cannot be explained wholly by a diminution of pollen in the air.

I am convinced from the *manner* of its production and its short duration that I was producing a refractory or inhibitory phase of hypersensibility. The difficulty in proving this statement lies in the lack of experimental evidence in this field of anaphylaxis. Attention has been directed to the more dramatic reactions in anaphylaxis such as shock, the paralyses, the increased coagulation-time of the blood, and thermogenic disturbances. Antianaphylaxis has been demonstrated repeatedly, but there is a growing impression that the refractory or anti stages of anaphylaxis are far more difficult to produce, less constant, and also not so lasting as in infectious processes.

You will note that my point of view differs from that of Dunbar, Noon and Freeman, and Clowes. Whereas they think that they are dealing with an infectious process similar to bacterial infection, I contend that the process is of the nature of a protein toxicosis. Noon and Freeman and Clowes have actually demonstrated not so much an actual immunity as perhaps a refractory stage of the eye- and nose-cells to the local action of the anaphylatoxin (Friedberger[14]). In Dunbar's antitoxin there may be free receptors—antianaphylatoxins—which shunt the local toxin action, thus inhibiting the usual reaction. In the fact that it is not introduced into the general circulation — that its action is purely local and does not reach the autonomous centers—may lie the explanation of the failure of Dunbar's serum. Dunbar will accept in no wise the anaphylactic theory of hay-fever.

Two clinical studies suggest themselves along the thought that hay-fever is a manifestation of hypersensibility:

1. If it can be shown that the muscle-reactions in hay-fever patients are modified just as they are in spasmophiliacs we shall have added another link to the chain of evidence.

2. Recent reports of eosinophilia in animals sensitized to foreign proteins have led observers to think that an increase in oxyphils in the blood is an indication of this condition. If this can be shown to occur in hay-fever, another clinical test can be added to our list. As a matter of fact, Dr. George D. Head has verbally communicated to me that eosinophilia is a common occurrence in those cases giving asthmatic symptoms. In one of my cases under complete control I had the blood studied before and during the season. At no time did the eosinophils go above 4.5 per cent.

CONCLUSION

The problem of autumnal pollinosis can be approached in three ways:

1. By the removal of the cause, namely, the eradication of ragweed.

2. By the removal of the patient from the ragweed environment.

3. By producing antihypersensibility.

The first proposition is a far more practical plan than one realizes at first thought. Societies of hay-fever sufferers, properly financed as county units, to cover state areas, could readily make ragweed disappear from roads, fields and empty lots.

The second proposition has been the solution of the problem of the favored few.

In the third proposition I see a glimmer of hope for the many who are condemned to this nagging scourge.

Lastly, I feel that in hay-fever, more than in any other clinical entity, is a fruitful field of search both in a clinical and biological sense, for exact measures, which are so essential and as yet so lacking in those vague conditions grouped under the term "hypersensibilities."

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14. Friedberger: Ztschr. f. Immunitätsforsch. u. exper. Therap., Orig., 1909, II, 208.

RECENT WORK ON THE PHYSIOLOGIC PATHOLOGY OF GLYCOSURIA *

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The advancement which medical knowledge has made during recent years can no doubt be in large part attributed to the closer affiliation which has developed between clinical and laboratory workers. Among the earliest attempts to apply the results of laboratory investigation in the clinic were those made in the case of diabetes, and although the progress achieved in the elucidation of the cause of this mysterious disease may not have been so striking as in the case of some other diseases, there has nevertheless been a steady accumulation of knowledge, which, when intelligently applied, is of immense value in its prophylaxis and treatment.

As attesting the value of laboratory investigations side by side with clinical, it is a noteworthy fact that the physicians who have been most successful in the treatment of diabetes are those who have kept themselves in constant touch with the work of both laboratory and clinic. Many of these men, such as Naunyn, Kültz, Lepine, Pavy, Minkowski and von Noorden, have contributed materially to the advancement of our knowledge of the history of sugar in the animal body by laboratory experiment, while at the same time busily engaged in observing and treating cases of diabetes in clinical practice.

One of the most important results of the laboratory investigations has been to show that conditions exhibiting at least some of the symptoms of diabetes in man, more especially glycosuria, can be induced in animals by a multitude of causes. This laboratory experience finds its clinical counterpart in the etiologic, therapeutic and prognostic aspects of diabetes mellitus: etiologically, in the fact that such apparently distinct and separate influences as inheritance, nervous strain and overindulgence in carbohydrate foods all predispose to the disease; therapeutically, in the undoubted benefit which certain cases derive from curtailment of the carbohydrate ingestion, while others benefit more from control of proteins, and prognostically, in the rapid development of the disease in some cases as compared

* Delivered before the Harvey Society, New York, Feb. 14, 1914.

with its gradual betterment in others. These facts would seem to indicate that in the clinical, as in the laboratory experience, we are dealing not with a distinct and separate pathologic entity, but with a variety of conditions having only certain symptoms in common. It is indeed quite uncertain whether there is any variety of laboratory diabetes which can be strictly compared with any clinical form, for even in the case of the diabetes which is produced in animals by removal of the pancreas, there are so many dissimilarities from most of the severe clinical cases that a strict analogy cannot be drawn between the two. We shall see, however, that in spite of these differences, many of the problems which the clinical observer has to face in treating the disease can be satisfactorily studied by work on animals, and many mistakes that might otherwise be made in applying new methods of treatment thereby avoided.

Facing such difficulties, how then are we to proceed in investigating the cause of diabetes? There is obviously but one way, and that is by collecting and carefully correlating as much information as we can regarding the causes which may produce the main symptoms of diabetes, by careful clinical study in the case of man, or by well-controlled and properly conducted experiments in the case of the lower animals. Of the symptoms of diabetes, glycosuria has naturally been chosen as the most characteristic. Since this symptom may depend merely on a local interference with renal function, and since the essential derangements which are responsible for the development of the diabetic state may already be considerably advanced before any glycosuria makes itself evident, it is more reliable for most purposes to employ as our criterion of diabetes not glycosuria, but hyperglycemia.

In doing this we must be careful, however, to bear in mind the physiologic conditions which govern the relationship between hyperglycemia and glycosuria. It is commonly taught that the kidneys do not permit any, or only a trace of, the blood-sugar to escape into the urine until the percentage in the blood has risen to considerably above the normal level. The kidney has been compared in this connection to the overflow tube in a cistern, the contents of which, representing the blood-sugar, are ordinarily discharged by other paths. It is only when these paths in some manner do not discharge quickly enough, or the inflow becomes too rapid, that the level rises until the overflow is reached.

For many purposes this analogy has proved most useful, but it is far from being a strictly true one. It explains why a temporary increase in blood-sugar, such as that produced by stimulation of the splanchnic nerves or by parenteral administration of sugar, is unaccompanied by any demonstrable glycosuria until the blood-sugar has risen to a certain height, after which the glycosuria runs more or less parallel with the hyperglycemia.[1] It also applies in the early stages of clinical diabetes, but it does not apply in the more advanced cases, either in those that are acute, in which there is usually much more sugar in the urine than would be expected from the amount present in the blood, or in chronic cases, in which there may be no demonstrable glycosuria and yet a marked degree of hyperglycemia. Some change in the excretory function of the kidney must therefore be considered as one of the results of the diabetic state in man, a conclusion for which evidence is furnished by the observation that the same degree of hyperglycemia causes more glycosuria in the diabetic than in the normal man.[2]

Even when the kidney itself is healthy this parallelism only obtains provided there is no disturbance in its blood-flow. Consequently we find that the excretion of sugar into the urine is readily affected by changes in the arterial blood-pressure. Thus a certain degree of hyperglycemia may cause marked glycosuria when the blood-pressure is normal, but none at all when it is subnormal.[3]

There are certain forms of experimental glycosuria which seem to owe their origin to no other lesion than one so affecting the kidney as to make it excrete large quantities of sugar from normal blood. These include, not only the important form of diabetes, which is caused by phlorhizin, but also that which occurs after poisoning by such metals as uranium, etc.[4] It is possible that there may be a clinical variety of renal glycosuria. Such cases could be diagnosed with certainty only by comparisons between the sugar concentrations of blood and urine, although a strong suspicion of their existence would be furnished by finding that the ingestion of excess of carbohydrate food did not increase the glycosuria. It is very doubtful, however, if such purely renal cases exist.[5]

I need scarcely pause to point out that although phlorhizin glycosuria, so far as it is unaccompanied by hyperglycemia, is unlike the clinical varieties of glycosuria, this does not in the least diminish the great importance of the studies which have been made by Lusk and his pupils concerning the nature of the faulty metabolism which it entails. Indeed, I do not overshoot the mark when I assert that more accurate knowledge concerning the possible antecedents of dextrose in the animal body has been gleaned by investigations on this form of experimental glycosuria than by those made on any other, either experimental or clinical; for, by establishing a constant drain of dextrose from the blood, phlorhizin calls into play all the agencies which are available in the organism for the manufacture of new supplies. It may be considered as the standard method for studies on glyconeogenesis.

In choosing hyperglycemia as the most characteristic symptom of an abnormal state of carbohydrate metabolism, we must be careful to remember that it is not necessarily a sign of diabetes.

Disregarding for the present the distinct degrees of hyperglycemia which occur in all diseases that are associated with asphyxial conditions or with pyrexia,[6] we must bear in mind that a distinct increase in blood-sugar occurs as a physiologic condition after the ingestion of any food that is rich in carbohydrates. Although this has been known for several years, it has recently been made the subject of more thorough investigation, both in the lower animals and in man. Bang and his collaborators,[7] using a so-called micro-method, estimated the sugar concentration of the blood in rabbits during short intervals of time following the giving by stomach-

1. Rolly and Oppermann: Biochem. Ztschr., xlix, 278. Macleod, J. J. R.: Diabetes, Its Pathological Physiology, New York, Longmans, Green & Co., 1913.

2. Jacobson, A. T. B.: Biochem. Ztschr., 1913, lvi, 471.
3. Macleod: Diabetes, Its Pathological Physiology.
4. MacNider: Jour. Pharmacol. and Exper. Therap., 1912, 423.
5. Weiland: Deutsch. Arch. f. klin. Med., 1911, cii, 167.
6. Schumm and Hegler: Mitteilungen aus den Hamburger Staats Krankenanstalten, 1911, xii, 429; 1913, xiii, 187. Oppermann and Rolly: Biochem. Ztschr., 1913, xlviii, 187, 200, 259, 471; xlix, 278. Hollinger: Deutsch. Arch. f. klin. Med., 1908, xcii, 217.
7. Bang: Der Blutzucker, Wiesbaden, 1913, Jacobson: See Footnote 2. Bö: Biochem. Ztschr., 1913, lviii, 106. Weis: Arch. f. exper. Path. u. Pharmacol., 1913, lxxiii, 159.

tube of quantities of from 2 to 10 gm. each of various sugars or starches. An increase in blood-sugar was evident in fifteen minutes, a maximum amounting to about double that of the normal being reached in about an hour, after which there was a gradual fall to the old level, which was attained in about three hours. This *postprandial hyperglycemia*, as we may call it, developed more quickly, and was more marked, in starved than in recently fed animals, and it became less and less evident when the administrations were repeated, until ultimately the 10 gm. of dextrose could be ingested without producing any effect on the blood-sugar. Galactose, maltose and saccharose, given in the same amounts, caused a similar rise, but the return to the normal level was delayed. Fisher and Wishart,[8] by giving 50 gm. of dextrose by stomach-tube, to dogs, found that hyperglycemia occurred during the succeeding hour, after which the blood-sugar quickly fell to normal, apparently in large part because of dilution of the blood by water absorbed from the tissues. At least it was found by making hemoglobin estimations that during the hyperglycemic stage the amount of water in the blood remained unchanged, but that as the hyperglycemia decreased, the blood became more diluted. As this occurred, there was evidence of increased combustion of carbohydrates, as shown by a rising of the respiratory quotient and by a greater energy output.

A most significant fact was brought to light, particularly by Bang's researches, namely, that 10 gm. of starch produced exactly the same effect on the blood-sugar as 10 gm. of dextrose, provided it was given to previously starved rabbits. Given to rabbits having food already in the stomach, the starch had little effect. Starch-rich foods, such as potatoes and turnips, produced the same results as starch itself; they readily caused hyperglycemia on an empty stomach, but had little effect when the stomach was full. Evidently the rate with which the starchy food passes from the stomach to the intestines determines in large degree the extent to which it is likely to produce hyperglycemia.

Before we seek for any application of the results obtained from experiments on lower animals that may aid us in the diagnosis and treatment of diabetes in man, we must obtain evidence that in man similar changes in the blood-sugar accompany the ingestion of carbohydrates. Such caution is particularly necessary when we are dealing with carbohydrate metabolism, because the factors which govern the various stages in the breakdown of sugar may vary considerably in different animal groups. Even in so comparatively simple a condition as that which we are considering, the dog and the rabbit, for example, do not behave alike, for in the former not only is the hyperglycemia which follows sugar ingestion less in degree than it is in the case of the rabbit, but there is a greater tendency for glycosuria to become established. Without actually trying, it would obviously be very risky to assume that what occurs in the rabbit will also occur in man. Jacobson[8] has, however, furnished us with evidence that it does, for, after giving 100 gm. of dextrose to normal persons before breakfast, he found that even in so short a time as five minutes an increase was evident in the blood-sugar, and that the hyperglycemia became more marked, until in about thirty minutes it had attained a maximum, after which it fell to reach its normal, or even a subnormal, level in about two hours. From the clinical point of view the most significant outcome of the researches was the discovery that in six out of fourteen persons, examination of the urine voided at short intervals after taking 100 gm. of *starch*, revealed the presence of glycosuria, which was also the case in eight of the cases after taking 100 gm. of dextrose. Practically the same results were obtained after giving an amount of white bread (167 gm.) capable of yielding 100 gm. of dextrose. The development of the hyperglycemia became much slower when digestion was prolonged by giving a large quantity of butter along with the bread. No change was produced in the blood-sugar after feeding with proteins alone.

The conclusion that the only difference between sugar and starch, so far as they influence carbohydrate metabolism, rests in their relative rates of absorption, is most strikingly confirmed by these observations.

A fundamental principle that must guide us in the treatment of early cases of diabetes in man is brought to light by these researches. We shall see later that the object which we must aim at in this treatment is the maintaining of the sugar content of the blood at as low a level as possible, and it is evident from the foregoing observations that to do this the ingestion not only of sugar, but of starchy foods as well, requires careful regulation. Whatever carbohydrates are given must not only be well below the tolerance limit, but they should be such as are so slowly broken down to sugar that no unphysiologic degree of hyperglycemia is permitted to develop.

The decrease in glycosuria which opium causes in many diabetics may be due to the retarding influence of this drug on the emptying of the stomach. Apart from the use of opium, however, there are several ways in which we may possibly bring about the delay in the absorption of starch. Three of these are: (1) By mixing the starch with fats; (2) by choosing foods in which the starch grains are naturally more or less protected from digestion, and (3) by choosing varieties of starches that are themselves only slowly digested.

These considerations naturally lead us to the question as to whether the undoubted benefit which certain cases of diabetes derive by feeding with oatmeal, in the absence of other carbohydrates and animal proteins, may not depend on the slow rate at which the starch in this food is digested and absorbed. Cohnheim and Klee have shown by observations on dogs having duodenal fistulas that oatmeal causes very much less pancreatic juice to be secreted than when an equivalent amount of wheaten bread or potatoes is given.[9] Although these two facts concerning oatmeal, namely, that it calls forth but little pancreatic secretion, and that it is a readily tolerated form of starchy food in diabetics, seem to be most simply correlated in the foregoing manner, yet we must not overlook another possible explanation for the benefit of the oatmeal treatment, namely, that by holding down the intestinal secretion of pancreatic juice, a better chance is given the pancreas to furnish the internal secretion or hormone whose deficiency is thought to be in some way associated with the cause of the disease. The well-known fact that the oatmeal treatment is not likely to meet any success unless such foodstuffs as animal proteins and wheat starch are simultaneously withheld is readily explained on account of the readiness with which

8. Fisher and Wishart: Jour. Biol. Chem., 1912, xiii, 49.

9. Baumgarten and Grund: Deutsch. Arch. f. klin. Med., 1911, p. 160. Cohnheim and Klee: Ztschr. f. physiol. Chem., 1912, lxxviii, 464.

these foods excite pancreatic secretion. In the same manner the benefit of alkali treatment may be accounted for. It is more probably in some such manner as that discussed above that oatmeal acts in diabetes than, as has been suggested, by its furnishing to the organism some vitamin necessary for the utilization of sugar. I refer to some such substance as has been shown to be necessary for the prevention of beriberi in rice-feeders and to be important for proper increase in body-weight in growing animals.

So far as these laboratory observations apply to the management of early cases of diabetes, we may sum up by saying that the earliest indication of derangement in carbohydrate metabolism is that the postprandial hyperglycemia is greater and persists longer than it should, becoming progressively more and more marked, until ultimately the separate periods fuse into one continuous hyperglycemia, which for some time is probably maintained at a fairly constant level by overflow of the excess of sugar into the urine. Ultimately, however, the kidneys, suffering possibly because of the constant toxic influence of the excess of sugar, become less permeable toward it, and again the hyperglycemia begins to mount. Although the literature does not, so far as I am aware, contain a sufficiently complete series of records of blood-sugar estimations in diabetes, especially in its earlier stages, to justify the positive assertion that this course is run by every case, yet very strong evidence that it is so is furnished by the observation that glycosuria is evident in early stages of diabetes only after taking food. The mixed twenty-four-hour specimen, when tested, however carefully, by the various qualitative tests for sugar, may be normal, whereas the specimen voided during the hour or two immediately following a meal may give a distinctly positive test. For practical purposes postprandial glycosuria must undoubtedly be considered as the initial symptom of diabetes, provided, of course, that excessive amounts of sugar have not been taken. Its occurrence should serve as an indication that the diet must be altered, for although we cannot cure a late case of diabetes, we can, by preventing glycosuria, if not indefinitely, yet for a long time, retard the development of incipient cases into those of a more serious character.

In employing hyperglycemia as our most trustworthy criterion of disturbed carbohydrate metabolism in experiments on anesthetized animals, many precautions must be taken so as to avoid, or at least discount, the effects which fright, anesthesia, body temperature, etc., may have in causing that condition.[10]

One other question concerning the sugar in the blood remains to be discussed, and that is its condition, whether free or combined. This does not mean combined in the sense that it is no longer included in our blood-sugar estimations, but combined in such a manner as to be readily split off. I do not intend to go into all the outs and ins of this most troublesome question, but I must at least pause to explain its significance, and to mention some of the most recent work which has been brought to bear on its elucidation. The hypothesis is that most of the dextrose exists in some sort of loose combination, possibly of physiochemical nature, with certain of the blood constituents, and that only a small fraction is free. It is further supposed that it is only after it has become thus combined that the sugar can be utilized by the tissue-cells. Of the older writers, it was Pavy who most insistently upheld this view, and there are few who have not in some of their writings expressed some adherence to it. The most recent advocate is Allen,[11] whose most exhaustive treatise on diabetes is indeed based on the idea that all the circulating sugar of the normal body exists in some sort of loose combination, as which it is assimilated by the tissues.

It is impossible to settle this question by means of chemical investigation of the blood. Even the brilliantly conceived experiments of Michaelis and Rona are insufficient. It was found in these that when samples of sterile unclotted blood were dialyzed against a series of isotonic solutions each containing a different percentage of dextrose, diffusion of dextrose in one direction or the other occurred in all save one case, namely, in that in which the percentage of dextrose in the outside fluid was exactly equal to the total sugar content of the blood. Such a result can be interpreted only by assuming that all of the sugar exists in the blood in a freely diffusible state, a conclusion which is supported by the results of the colloidal precipitation experiments of the same workers. The chemical evidence is therefore all in favor of the view that the blood-sugar exists in a free state. On what grounds, then, do so many authorities insist that the sugar is practically all combined? They do so on biologic grounds, namely, because of the difficulty of explaining, in any other way, why the blood-sugar does not constantly leak into the urine. Pavy, for example, insists that if it were free in the blood, sugar, like any other body of small molecular weight, would flow off in the urine; and exactly the same line of argument is contained in Allen's statement that "in normal animals all sugar not injected intravenously reaches the circulation in combination with a colloid," so that "it behaves as a typical colloid, not only in failing to pass into the urine, but also in depressing the excretion of this fluid. When, however, sugar is added directly to the blood, it fails to become thus combined, with the result that like any other crystalloid it escapes in the urine and stimulates diuresis." These conclusions are based on the observation that when dextrose is given intravenously to a normal animal, it causes diuresis, whereas anuria results when it is given in any other way. To explain these differences it is supposed that the sugar molecule, in passing through the endothelial wall of the capillaries, combines with some substance, as a result of which the sugar becomes available for incorporation in, and utilization by, the tissues, which, in the free state, it is not. This substance is supposed to be related to the internal secretion of the pancreas, and it has been called an amboceptor to indicate that it links the dextrose molecule to the tissues.

Upholders of these views, however, do not stop short in merely explaining how sugar circulates in the normal animal. They go further, for they tell us that "deficiency of the amboceptor is diabetes"; in other words, they assert that the essential lesion in diabetes is a failure of the sugar that is absorbed from the intestine to become united with amboceptor, as a consequence of which it circulates in a free state and is not available for combustion in the tissues. This free sugar, acting like a crystalloid, stimulates the kidney to diuresis and itself escapes by this path. Allen has cleverly defended this hypothesis against most of the criticisms that could

10. Hirsch and Reinbach: Ztschr. f. physiol. Chem., 1913, lxxxvii, 122. See also references in Footnote 6.

11. Allen: Glycosuria and Diabetes, Boston, 1913.

be brought against it, although I for one am not yet quite convinced that the striking differences in diuretic effect which he found according to the manner of administration of the sugar may not be largely a question of the rate at which the sugar becomes added to the blood. It is at least significant that when the intravenous injections of sugar are made very slowly, the renal function behaves exactly as it does when the slower subcutaneous or intestinal paths of absorption are traversed.[12] The remarkable disappearance from the blood which we have seen to occur when dextrose is intravenously injected in eviscerated animals shows also that incorporation with the tissues is possible without any amboceptor attachment in Allen's sense.

It has been common to consider that glycogen is nothing more than a storage material for the carbohydrate which the organism does not require for its immediate uses. Some have thought, however, that glycogen, besides being a storage material, is likewise a necessary preliminary stage in the metabolism of sugar; in other words, that no sugar is burned unless it has passed through a glycogen stage. Time will not permit me to say more with regard to this question than that there is so far no conclusive evidence which would enable us to decide it one way or the other. That liverless animals can burn injected sugar, or that isolated muscular tissues use it, is no proof that the sugar has been directly used, for the muscles contain glycogen. On the other hand, the glycolytic powers of blood are exactly the same toward ordinary dextrose as toward dextrose produced by the diastase of the blood or liver acting on glycogen.[13]

Although of the highest importance as showing the manner in which carbohydrates behave immediately after they are ingested, the researches which we have so far considered bring no light to bear on the nature of the disturbances which may cause excessive amounts of dextrose to pile up in the blood, independently of increased ingestion of carbohydrates. They inform us as to how excess of ingested sugar may be disposed of, but they do not explain why in severe forms of diabetes there comes to be a constant and uncontrollable new production of sugar, or glyconeogenesis, in the organism itself. To explain this our attention must be turned to a study of the conditions which bring about excessive sugar-production in laboratory animals. At the outset of such an investigation, however, we encounter a serious difficulty in the multiplicity of experimental conditions which may cause hyperglycemia and glycosuria. It becomes necessary to adopt some classification. To start with, a classification can readily be made into transient and permanent forms of hyperglycemia. There is practically but one form of permanent experimental hyperglycemia, namely, that which follows complete removal of the pancreas, and, since the behavior of the animal in this condition is in many respects like that of the severely diabetic patient, it has been chosen as the experimental prototype of the clinical disease. Most forms of transient experimental hyperglycemia are more or less dependent on stimulation of those portions of the nervous system that exercise a control over the glycogenic function of the liver. The cause of the difference between the two forms is, therefore, that in the transient form the excess of sugar is derived from no other source than the glycogen reserves of the liver and muscles, whereas in the permanent form it is derived only from this source until no more glycogen remains, after which it comes from protein or possibly from some varieties of fat. An excessive hepatic glycogenolysis occurs as the first stage in both forms of experimental diabetes, so that an understanding of the nature of the factors which control the glycogenic function of the liver, and of the conditions which may lead to a failure of this control, is fundamental to intelligent investigation of the diabetes problem. Although it has so far been impossible by any kind of disturbance of the nervous system to create a diabetic state in laboratory animals which is comparable with that which follows removal of the pancreas, yet there is abundance of clinical evidence to show that a certain nervous element does enter into the causation of diabetes mellitus. The frequent occurrence of diabetes in those predisposed by inheritance to neurotic conditions, or in those whose daily habits entail much nerve-strain, and the aggravation of the symptoms which is likely to follow when a diabetic patient experiences some nervous shock, all point in this direction.

Diabetes is common in locomotive engineers and in the captains of ocean liners, that is to say, in men who in the performance of their daily duties are frequently put under a severe nerve-strain. It is apparently increasing in men engaged in occupations that demand mental concentration and strain, such as in professional and business work. Cannon[14] found glycosuria in four out of nine students after a severe examination, but only in one of them after an easier examination. In the urine of twenty-five members of a famous football squad, sugar was found present immediately after a keenly contested game in twelve. Anxiety and excitement were its cause, for five of the twelve were substitutes who did not get into the game.†

Although these nervous conditions, by excitement of hepatic glycogenolysis, produce at first nothing more than an excessive discharge of sugar into the blood, a condition which is exactly duplicated in our laboratory experiments by stimulation of the nerve-supply of the liver, their repetition gradually leads to the development of a permanent form of hyperglycemia. To prevent the repetition of these transient hyperglycemias must be our aim in the treatment of the early stages of the disease. This may be done partly by control of the diet and partly by removal of any possible cause of nerve-strain.

The simplest experimental condition which illustrates the relationship between the nervous system and the blood-sugar is electrical stimulation of the great splanchnic nerve in animals in which, by previous feeding with carbohydrates, a large amount of glycogen has been deposited in the liver. By examination of the blood as it is discharged into the vena cava from the hepatic veins, the increase in blood-sugar is very evident in from five to ten minutes after the first application of the stimulus, but it is not until later that a general hyperglycemia becomes evident. The conclusion which we may draw from these results is that the splanchnic nerve contains efferent fibers controlling the rate at which glycogen becomes converted to dextrose. The center from which these fibers originate is situated somewhere in the medulla oblongata, for the irritation that is set up by puncturing this portion of the nervous system with a needle yields similar results to those

12. Pavy and Godden: Jour. Physiol., 1911, xliii, 199.
13. Macleod: Jour. Biol. Chem., 1913, xv, 497.
14. Cannon: Am. Jour. Physiol., 1914, xxxiii, 356.
† Cannon: Private communication.

which follow splanchnic stimulation. It is natural to assume that there must be afferent impulses running to this center. Such impulses have indeed been described in the vagus nerves, but their demonstration is by no means an easy matter on account of the disturbance in the respiratory movements which stimulation of the central ends of these nerves entails. The changes which such disturbances bring about in the aeration of the blood may in themselves be responsible for the hyperglycemia. This much can at least be said: that when the respiratory disturbances are guarded against, as by intratracheal insufflation of oxygen, vagal hyperglycemia is much less marked, if not entirely absent. But this question requires more thorough investigation.

There are two explanations possible for the increased glycogenolysis which follows the stimulation of the efferent fibers in the splanchnic nerves: either they exercise direct control over the glycogenic functions of the hepatic cells, or they govern the discharge from some ductless gland of an internal secretion or hormone which excites the glycogenolytic process. From their anatomic position, the adrenals are to be thought of in this connection, and evidence that they really do perform such a function has seemed to be furnished by the fact that after they are extirpated, splanchnic stimulation no longer produces hyperglycemia,[15] nor, indeed, does puncture of the medulla.[16] Not only this, but there is no doubt that the nervous system, acting by way of the splanchnic nerves, does exercise a control over the discharge of the internal secretion of the adrenal gland,[17] and, moreover, that extracts of the gland, which we must suppose contain the internal secretion, cause hyperglycemia. But on theoretical grounds alone, certain difficulties immediately present themselves in accepting this as the mechanism by which the nervous system controls the sugar output of the liver, for if increased sugar formation in the liver is dependent on a discharge of epinephrin, why should this secretion be caused to traverse the entire circulation before reaching the liver?

There are, besides, certain experimental facts which do not conform with such a view. Thus, after complete severance of the hepatic plexus of nerves, stimulation of the splanchnic nerve does not cause the usual degree of hyperglycemia, whereas electric stimulation of the peripheral end of the cut plexus does cause it. On the one hand, therefore, there is evidence that stimulation of the efferent nerve-path above the level of the adrenals has no effect on the sugar-production of the liver in the absence of these glands, and on the other, we see that when they are present, stimulation of the nerve-supply of the liver is effective, even though the point of stimulation is beyond them. There is but one conclusion that we may draw, namely, that the functional integrity of the efferent nerve-fibers that control the glycogenolytic process of the liver depends on the presence of the adrenals, very probably on the hormone which the glands secrete into the blood. This conclusion is corroborated by the fact that stimulation of the hepatic plexus, even with a strong electric current, some time after complete removal of both adrenals, is not followed by the usual degree of excitement of the glycogenolytic process.

I have called attention to these experiments because of the light which they throw on the relationship existing between the nervous, and at least one form of hormone control of the sugar-output of the liver. They indicate that when a sudden increase of blood-sugar is required, the glycogenic center sends out impulses which not only act on the hepatic cells, but also simultaneously influence the adrenals in such a manner as to facilitate the passage of the nerve impulse on to the liver-cells. The fact elicited by Cannon and his co-workers[18] and by Elliott, that hypersecretion of epinephrin occurs during conditions of deep emotion, fright, fear, etc., becomes doubly interesting when we consider that these conditions also lead to hyperglycemia. It seems natural enough to assume that the discharge of nervous energy which occurs in man in emotional states likewise affects both the adrenal activity and the glycogenic function of the liver.

We are as yet quite in the dark as to the mechanism by which the nerve impulse brings about increased glycogenolysis. Many possibilities must be borne in mind. It will be remembered that the glycogen is deposited in the cytoplasm of the liver-cell in somewhat irregular masses, being possibly combined with some form of sustentacular substances. Our present problem is to explain how it comes about that these masses of glycogen are suddenly discharged from the cells as dextrose when the nerve-supply is stimulated.

The first thing to be thought of is an increase within the liver-cell of the ferment which hydrolyzes glycogen to dextrose. But this does not seem to be the mechanism, for it is impossible to show that there is any more of this ferment in an extract prepared from a liver in which active glycogenolysis is in progress than in one from a liver that is quiescent in this regard.[19]

It is well known that enzyme activities may become most markedly altered by slight changes in the chemical and physical nature of the environment in which they act. Diastatic enzymes are particularly susceptible to the reaction of their environment, a very slight degree of acidity, as measured by the H ion concentration favoring, whereas a trace of alkalinity markedly depresses. That this favoring action of acid may occur in the case of the diastase of the intact liver has been well established, partly by studying the effect which is produced on sugar tolerance by administering acids by way of the alimentary canal,[20] and partly by studies on post-mortem glycogenolysis.[21] It might be thought then that the nerve-impulse sets free in the liver-cell a certain amount of acid, which being produced locally, would encourage diastatic action before it became neutralized. This liberation of free acid could obviously be dependent on a curtailment in the blood-supply of the hepatic cell, thus producing a local accumulation either of carbonic or of other less completely oxidized acids. That vascular changes do occur in the liver when the hepatic nerves are stimulated,[22] and that such changes may in themselves alter the rate of glycogenolysis, are well-established facts.[23] The accelerating effect of epinephrin on the glycogenolysis which is occurring in a perfused liver outside the body[24] may be explained as

15. Macleod and Pearce, R. G.: Am. Jour. Physiol., 1912, xxix, 419.
16. Mayer, A.: Compt. rend. Soc. de Biol., 1908, lxiv, 219.
17. Kahn: Arch. f. d ges. Physiol. (Pflüger's), 1911, cxl, 209; 1912, cxlvi, 578.
18. Cannon and De La Paz: Emotional Stimulation of Adrenal Secretion, Am. Jour. Physiol., 1911, xxviii, 64.
19. Macleod and Pearce, R. G.: Am. Jour. Physiol., 1911, xxviii, 403.
20. Elias: Biochem. Ztschr., 1913, xlviii, 120. Elias and Kolb: ibid., 1913, lii, 331. Murlin and Kramer: Jour. Biol. Chem., 1913, xv, 365.
21. Macleod and Pearce, R. G.: Am. Jour. Physiol., 1911, xxvii, 341.
22. Burton-Opitz: Quart. Jour. Physiol., 1910, iii, 197.
23. Masing: Arch. f. exper. Path. u. Pharmacol., 1912, lxix, 431.
24. Fröhlich and Pollak: Zentralbl. f. Physiol., 1913, xxiv, 1326. Bang: Biochem. Ztschr., 1913, xlix, 81.

due to limitation of blood-supply on account of vasoconstriction; but until such a local production of acid is actually demonstrated in the liver-cell, it would be unsafe to give this hypothesis too much weight.

Another possibility is that the glycogen, on account of its combination with a sustentacular material, is ordinarily removed from the influence of the intrahepatic glycogenase, and that the nerve-impulse acts by disrupting this combination and thus exposing the glycogen to attack. In contrast to the preceding, we may call this the mechanical hypothesis. It deserves serious consideration, for it has been shown that very little post-mortem glycogenolysis occurs in the intact liver of frogs in winter — even though at this time the organ contains an excess of glycogen — but glycogenolysis becomes marked when the liver is broken down by mechanical means.[25]

There is, indeed, some evidence that the glycogen is itself expelled from the liver-cell into the lymph-spaces, where it is converted to sugar by the glycogenase, which the fluid of the spaces contains in large amount. Thus, Ishimori,[26] working in Hofmeister's laboratory, found by microscopic examination of sections of the rabbit's liver stained for glycogen by Best's carmin method, that some time after *piqûre* had been performed, the glycogen masses were found to have been irregularly discharged from the lobules, some of them being actually present as such not only in the interlobular lymph-spaces, but also in the venous radicals, whereas that which remained in the lobule was distributed in an irregular fashion. The conclusion seems justified that the nerve-impulse causes glycogen itself to be discharged from the cell into the lymph-space, where, being freely exposed to the glycogenolytic enzymes therein present, it very quickly becomes hydrolyzed to sugar. The extrusions of zymogen granules and vacuoles are quoted as examples of processes of a similar nature occurring in other cells. The increased vascularity of the liver in *piqûre* is significant in light of these researches.

To sum up, we may conclude that the nerve-impulse that brings about an increased discharge of dextrose from the liver does so either by producing in the liver-cells some chemical change which facilitates the action of the glycogenase on the glycogen, or by causing the glycogen masses to become dissociated from the protoplasm so that they become susceptible to the intracellular enzymes, or become extruded from the cell so that they are attacked by the glycogenase which exists in the neighboring lymph- and blood-vessels.

There is only one form of experimental diabetes, however, namely, that due to removal of the pancreas, which can be considered as analogous with the severer forms of the disease in man. It is true that disturbances in carbohydrate metabolism, sometimes severe enough to cause glycosuria, are also produced by disturbances in the functions of other ductless glands, for example, by removal of more than two parathyroids, or by conditions which cause a hypersecretion of the hypophysis of the pituitary gland; but there is no evidence that permanent diabetes, as encountered in clinical practice, bears any relationship to lesions in these glands. On the other hand, experimental pancreatic diabetes can be made to simulate very closely the disease in man. This was first of all demonstrated by Sandemeyer, who found that if not all but the greater part of the pancreas were removed, the animals for some months, if at all, were only occasionally glycosuric, but later became more and more frequently so, until at last the condition typical of complete pancreatectomy supervened. Similar results have more recently been obtained by Thiroloix and Jacob, in France, and by Allen[11] in this country. These investigators point out that different results are to be expected according to whether the portion of pancreas which is left does, or does not, remain in connection with the duodenal duct. When this duct is ligated, atrophy of any remnant of pancreas that is left is bound to occur, and this is associated with rapid emaciation of the animal, diabetes and death. When the remnant surrounds a still patent duct, a condition much more closely simulating diabetes in man is likely to become developed, one, namely, in which there is, for some months following the operation, a more or less mild diabetes, which, however, usually passes later into the fatal type. It is, of course, difficult to state accurately what proportion of the pancreas must be left in order that this interesting condition may supervene. Leaving a remnant amounting to from one-fifth to one-eighth of the entire gland is commonly followed by a mild diabetes, whereas if only one-ninth or less is left, a rapidly fatal type develops. As in clinical experience, the distinguishing feature between the mild and the severe types of experimental pancreatic diabetes is the tolerance toward carbohydrates. In the mild form, no glycosuria develops unless carbohydrate food is taken; in the severe form, it is present when the diet is composed entirely of flesh. It is thus shown that "by removal of a suitable proportion of the pancreas, it is possible to bring an animal to the verge of diabetes, yet to know that the animal will never of itself become diabetic. . . . Such animals, therefore, constitute valuable test objects for judging the effects of various agencies with respect to diabetes" (Allen). It therefore becomes theoretically possible to investigate, on the one hand, other conditions which will have a similar influence to removal of more of the gland, or, on the other, conditions which might prevent the incidence of diabetes, even though this extra portion of pancreas is removed. From the work which he has already done, Allen believes that he has sufficient evidence to show that the continued feeding with excess of carbohydrate food will surely convert a mild into a severe case, and in one experiment he succeeded in bringing about the same transition by performing puncture of the medulla; that is, by creating an irritative nervous lesion. By none of the other means usually employed to produce experimental glycosuria could the bordering case be made diabetic, although one such animal became acutely diabetic after ligature of the portal vein. To the clinical worker the value of these results lies in the fact that they furnish experimental proof that a so-called latent case of diabetes, that is, one that has a low tolerance value for carbohydrates, may be prevented from developing into a severe case by proper control of the diet. Attempts to show whether or not there are any conditions which might bring about improvements in animals that were just diabetic have not as yet been sufficiently made to warrant any conclusions that could help us in the treatment of human cases. The encouragement of the internal pancreatic secretion by diminution of that discharged into the intestine has already been referred to.

The certainty with which diabetes results from pancreatectomy in dogs, as well as the frequent occurrence

25. Grode and Lesser: Ztschr. f. Biol., 1913, lx, 371. Lesser: Biochem. Ztschr., 1913, lii, 471.
26. Ishimori: In Hofmeister: Sammlung der von der Nothnagel-Stiftung veranstalteten Vorträge, 1913, i.

of demonstrable lesions in the pancreas in diabetes in man, leaves no doubt that this gland must be in some way essential in the physiologic breakdown of carbohydrates in the normal animal, but how, we cannot at present tell. All we know is that the first change to occur after the gland is removed is a sweeping out of all but a trace of the glycogen of the liver, although the muscles may retain theirs; indeed, in the cardiac muscle there may be more than the usual amount.[27] Nor can any glycogen be stored in the liver when excess of carbohydrates is fed. After the glycogen has disappeared, a new process sets in, namely, that of glyconeogenesis, which, as its name indicates, consists of a manufacture of new sugar out of other than carbohydrate molecules. It is possible that more or less glyconeogenesis occurs in the animal body in health, and that the process merely becomes exaggerated in diabetes. Be that as it may, the fact remains that in this disease the tissues come to melt away into sugar, and all the symptoms of acute starvation, associated with certain others that are possibly due to a toxic action of the excess of sugar or of other abnormal products in the blood, make their appearance.

So far it might be permissible to consider an overproduction of dextrose as the cause of the hyperglycemia of pancreatic diabetes, just as we have seen it to be of these forms of hyperglycemia that are due to stimulation of the nervous system; but this cannot be the case, for another very definite abnormality in metabolism becomes evident, namely, an inability of the tissues to burn sugar. This fact is ascertained by observing the respiratory quotient, which is the ratio between the volume of carbon dioxid expired and the oxygen absorbed. When dextrose is added to the blood in a normal animal, the quotient rises almost, if not entirely, to unity, but however much may be added in the case of a completely diabetic animal, no change occurs. Some investigators have endeavored to explain this lowering of the quotient in other terms than that it indicates an inability to burn sugar, but the recent work of Verzár and of Murlin[28] removes all doubt about the matter.

There are, therefore, two essential disturbances of carbohydrate metabolism in diabetes, overproduction of sugar and abolition of the ability of the tissues to use it. It becomes important for us to see whether the tissues exhibit this inability to use sugar when they are isolated from the animal, for if they should, a much more searching investigation of the essential cause of their inability would be possible than is the case when they are functioning along with the other organs and tissues. I need not here mention the earlier experiments of Lépine and his pupils, who thought that diabetic blood did not possess the glycolytic power of normal blood; or of those of Cohnheim, who believed that mixtures of the expressed juices of muscle (liver) and pancreas, although ordinarily destroying dextrose, failed to do so when they were taken from a diabetic animal. The failure to show a depression of glycolytic power by these methods prompted Knowlton and Starling[29] to investigate the question whether any difference is evident in the rate with which dextrose disappears from a mixture of blood and saline solution used to perfuse a heart outside the body, according to whether the heart was from a normal or a diabetic dog. In the first series of observations which these workers made, it was thought that the heart of a normal animal used dextrose at the rate of about 4 mg. per hundred grams of heart substance per minute; whereas that of a diabetic (depancreatized) animal used less than 1 mg. If such striking differences in the rate of sugar consumption could make themselves manifest for so relatively small a mass of muscular tissue as that of the heart, it is permissible to assume that a much more striking difference could be demonstrated when the perfusion fluid is made to traverse all or practically all of the skeletal muscles, as well as the heart. For this purpose an eviscerated animal may be employed; that is, one in which the abdominal viscera are removed after ligation of the celiac axis and mesenteric arteries, and the liver is eliminated by mass ligation of its lobes. To avoid the necessity of anesthesia the cerebral vessels are also tied off. R. G. Pearce and I[30] have found that the rate at which dextrose disappears from the blood in such a preparation, although very irregular, is in no way different in completely diabetic as compared with normal dogs. We were thus unable to confirm any of Knowlton and Starling's earlier conclusions. Patterson and Starling[31] have subsequently shown that a serious error was involved in the earlier perfusion experiments, partly on account of a remarkable but irregular disappearance of dextrose from the lungs, and partly because the diabetic heart may contain a considerable excess of glycogen, from which its demands for sugar may be met without calling on that of the perfusion fluid. These observations have made it evident that conclusions regarding the rate of sugar consumption in the tissues cannot be drawn from the rate of the disappearance of this substance from the blood, unless determinations are simultaneously made of the amounts of glycogen in the tissues before and after the perfusion.[32] The property of the muscles to take up sugar from the blood which Meltzer and Kleiner have recently investigated, further illustrates the difficulties of work of this nature.[33]

Much more satisfactory results can be procured by taking as our index of dextrose consumption, not the rate at which dextrose disappears from the blood, but the behavior of the respiratory exchange after the injection of dextrose. In normal animals such injections, as we have already seen, cause an increase in the carbon dioxid excretion and a rise in the respiratory quotient. In diabetic (depancreatized) animals, on the other hand, it is asserted by Verzár that the sugar injections do not have this effect, provided a period of at least five days has been permitted to elapse since the pancreas was removed.[34] It is pertinent to note that if five days elapse after the removal of the pancreas before there is definite evidence of deficient sugar combustion, this cannot be the immediate cause of the diabetic condition.

The fact that on the one hand the normal animal, as judged from the respiratory exchange, burns more sugar when an excess is present in the blood, while the diabetic animal fails to do so, but excretes the excess instead, does not, however, carry us very far in deciding whether the failure to burn the sugar is dependent on a fault resident in the consuming tissues themselves, or on one affecting some organ whose function it is to prepare the sugar molecule for utilization.

27. Cruickshank: Jour. Physiol., 1913, xlvii, 1.
28. Verzár: Biochem. Ztschr., 1911, xxxiv, 63.
29. Knowlton and Starling: Jour. Physiol., 1912, xlv, 146. Maclean and Smedley: ibid., 1913, xlv, 470.
30. Macleod, J. J. R., and Pearce, R. G.: Zentralbl. f. Physiol., 1913, xxvi, 1311. Am. Jour. Physiol., 1913, xxxii, 184.
31. Patterson and Starling: Jour. Physiol., 1913, xlvii, 155. Cruickshank and Patterson: ibid., 1913, xlvii, 381.
32. Camis: Arch. ital. de biol., 1913, lx, 113.
33. Meltzer and Kleiner: Proc. Am. Physiol. Soc., December, 1913.
34. Verzár and Fejér: Biochem. Ztschr., 1913, liii, 140.

All we really know at present is that the depancreatized animal cannot burn sugar, but, encouraged by the fruitful outcome of researches on the ductless glands, we have come to assume that this inability is because the removal entails the loss to the organism of some internal secretion or hormone which is necessary for sugar combustion. This is, however, by no means the only way by which the results can be explained, for we can assume that the pancreas owes its influence over sugar metabolism to some local change occurring in the composition of the blood as this circulates through the gland — a change which is dependent on the integrity of the gland and not on any one enzyme or hormone which it produces. It is obvious that the results of removal of the gland could be explained in terms of either view, and indeed, there is but one experiment which would permit us to decide which of them is correct. This consists in seeing whether the symptoms which follow pancreatectomy are removed, and a normal condition reestablished, when means are taken to supply the supposed missing internal secretion to the organism; if they should be, conclusive evidence would be furnished that it is by "internal secretion" and not by "local influence" that the gland functionates.

The experiments have been of two types: in the one, variously prepared extracts of the glands have been employed, and in the other, blood which is presumably rich in the internal secretion. The most recent work with pancreatic extracts has been performed by Knowlton and Starling, by Verzár,[34] and by Murlin and Kramer.[20] Although the first-mentioned workers have thought that their earlier experiments pointed to an improvement in the sugar-consuming powers of the isolated diabetic heart, when pancreatic extracts were mixed with the perfusion fluid, more recent investigation has shown that the complexity of the experimental conditions renders such a conclusion untenable. It has been unreservedly withdrawn by Patterson and Starling. Neither Verzár nor Murlin and Kramer were able to find that injection of pancreatic extracts into a depancreatized animal produced any effect on the respiratory quotient, although Murlin and Kramer did observe that injections of extracts of pancreas and duodenum produce a temporary fall in the dextrose excretion in the urine. More thorough investigation of the cause of this apparent antidiabetic effect, however, revealed the fact that it was due to the alkalinity of the extract. Alkali temporarily decreases and acids increase the sugar excretion in the urine in diabetic animals, possibly by the influence which they have in accelerating or depressing glycogenolytic activity. Apart from the conclusions which they permit us to draw, these experiments are of great importance in cautioning us as to the extreme technical difficulties that are likely to embarrass us in attacking this problem.

Nor have the experiments with blood-transfusions yielded results that are any more satisfactory. In undertaking these experiments it is of course assumed that the internal secretion is present in the blood, and that if this blood be supplied to an animal suffering from diabetes because of the loss of its pancreas, it will restore it to a non-diabetic state. The most important experiments have been performed by Hédon, Forschbach, Carlson and Drennan, Murlin and Kramer,[20] Woodyat,[35] and Verzár and Fejér.[34] It would be useless for me to review the results of each observer. The general conclusions, which may be drawn from their researches as a whole, is that there is no evidence that the blood of a normal animal, even when it is from the pancreatic vein, contains an internal secretion that can restore to a diabetic animal any of its lost power to utilize carbohydrates. When the extent of glycosuria alone is used as the criterion of the state of carbohydrate metabolism, serious errors in judgment are liable to be drawn. The condition of the blood-sugar and the extent and character of the respiratory exchange are the most reliable indexes.

In this article I have endeavored to do no more than pick out a few of the researches that have interested me most during the past two years. I have been compelled, perhaps somewhat arbitrarily, to exclude from my review among other things the extremely interesting and important work which has in this time been done on the nature of the chemical processes which are responsible for the new formation of sugar (glyconeogenesis) in the diabetic animal, and of those concerning the formation of acetone bodies which so regularly make their appearance in the later stages of the disease.

We may hope that the outcome of the studies which Ringer has recently prosecuted in this direction will be the successful control by therapeutic means of the development of the acetone bodies which occurs in the later stages of diabetes, just as the researches which I have attempted to review indicate in what way we may hope to control the disease in its earlier stages.

35. Woodyat: Proc. Am. Physiol. Soc., December, 1913.

POSSIBILITIES IN THE USE OF THE AUSCULTATORY METHOD OF DETERMINING BLOOD-PRESSURE IN PNEUMONIA

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The advantage to be derived from the following of pneumonia cases with the sphygmomanometer has already been so fully shown that no further comment on this fact is necessary other than to emphasize by repetition its importance. The significance of the Gibson pulse-blood-pressure ratio in its relation to prognosis and treatment has likewise been fully shown.[1] This, in brief, as propounded by its originator, G. A. Gibson of Edinburgh, states that, in pneumonia, so long as the blood-pressure expressed in millimeters of mercury remains well above the pulse-beat per minute, the condition of the circulation can be considered as satisfactory, and the outlook for the patient as correspondingly favorable. Should the pulse per minute curve, however, rise above the systolic blood-pressure curve, the case assumes a most serious aspect, and unless this state of affairs is quickly amenable to our therapeutic endeavors a fatality may be expected.

While the preceding assertions have not borne without exception the extended clinical test accorded them, yet in spirit if not in letter they have been abundantly justified. The types of cases which have shown a lack

1. Gibson, G. A.: Some Lessons from the Study of Arterial Pressure, Edinburgh Med. Jour., 1908, n. s., xxiii, 17. Gordon, G. A.: Some Remarks on the Value of Accurate Blood-Pressure Estimations, Edinburgh Med. Jour., 1910, n. s., iv, 31. Hare: Therap. Gaz., 1910, Series 3, xxvi, 387. Goodman and Pitman: Therap. Gaz., July, 1911.

of conformity to the rule have been those in which the pulse and systolic pressure were, independently of the pneumonia, out of the proper relation. Most prominent among these are the senile and arteriosclerotic high blood-pressure cases in which the systolic pressure is so far above the pulse-rate that their comparison by the Gibson ratio may be most misleading. Thus a ratio which would indicate a splendid state of affairs in a young person with elastic vessels might prove incompatible with life in the case of an elderly arteriosclerotic. Such persons may die with a pressure well above pulse-rate. At the other extreme are found the cases with habitually relaxed circulation, wherein the system must have accommodated itself through necessity to the output of a cardiovascular mechanism of poor efficiency, and can therefore the more tenaciously cling to life in spite of a still further circulatory depression. This group comprises young persons—as instanced by chlorotic young girls—and more elderly persons of an anemic or emaciated habit. These cases are the ones in which life is maintained and recovery accomplished in spite of a continued pulse-rate above the blood-pressure. Between these extremes, cases are occasionally found which deviate from the rule but in which the influencing factor can usually be found to explain the discrepancy, as a nephritis, valvular defect, etc.

In all of these exceptions, however, as a working substitute for the ratio, Gibson's statement holds that "a pressure appreciably below normal in pneumonia is invariably an evil omen and any considerable fall bodes disaster." The "normal" pressure here must be taken as that normal to each individual when not suffering from pneumonia and not as referring to the usual 120 to 130 mm. The failure of Gibson's rule to hold in all cases of pneumonia must be largely due to the fact that in this instance alone is the systolic blood-pressure taken as the sphygmomanometric index of circulatory efficiency. As in no other condition is this the case why should it be so in pneumonia? Instances of high blood-pressure with poor circulatory efficiency are so common as to need no comment. Indeed, hardly less frequent are cases in which improvement takes place with an actual drop in the systolic blood-pressure, and it is with wonder, as well, that we recall the respectable pressures often maintained to the very last by the dying heart.

To make the Gibson pulse-blood-pressure ratio in pneumonia an even more valuable guide to the state of the circulation than it already is I would urge the attempt to estimate mentally in every case just what the pulse-blood-pressure ratio was prior to the onset of the disease, the age, vessels, heart lesions, kidney changes, etc., being taken into consideration. To this I would further add the noting of the auscultatory phases of the blood-pressure reading. With the auscultatory method of determining blood-pressure[2] now in general use, a noting of the auscultatory phases adds practically nothing in the way of time or trouble to the pulse-blood-pressure estimation.

The auscultatory phases above mentioned, in brief, number four and comprise the so-called auscultatory sequence. This sequence of sounds is heard with the stethoscope placed over the brachial artery below the sphygmomanometer cuff, as the column of mercury is gradually allowed to fall in passing downward from the systolic pressure.

The first sound heard, after obliteration of the pulse, is a clear-cut tap, and indicates the point of systolic pressure. As the column of mercury falls other similar taps are heard. These *in toto* constitute the first phase. A sudden change from taps to a succession of murmurs marks the passage of first into second phase. The third phase is instituted on a reappearance of clear tapping sounds, and, as the column of mercury is allowed to gently sink, gives way to a succession of dull, muffled taps—the fourth phase. At the cessation of these sounds the mercury column continues its fall to the zero mark, unaccompanied by auscultatory phenomena. This absence of sound has been called by some the fifth phase. In view of the recent work by Warfield[3] and also by Weysse and Lutz,[4] the diastolic pressure must be taken as corresponding with the beginning of the fourth phase, and not as with the cessation of all sounds.

The proper allotment of space, in the normal, to each of these phases has been worked out and the whole graphically presented on a percentage basis. A backward look at the manner in which the question of auscultatory sequence reading has been presented leads me to feel that its kernel of truth has been lost in the maze of numerals and percentages that have accompanied its description. What is needed, for the appreciation of the worth of this method, is its reduction to the simplest terms. Who of us on listening to a heart consciously recalls the numerical relations and ratios of the various components of the cardiac cycle? We have, rather, fixed in our consciousness what we look on as a normal sequence of these sounds. This is the fruit of numberless examinations and serves us as a standard for comparison. The impress of a normal auscultatory sequence must be sought in the same way. It will come through our sense of hearing, in repeated examinations, rather than by studying sets of figures or by devoting much time to percentage calculations.

It is important to realize that normally these four phases do exist. Of further importance is it that a predominance of the characteristics of the second and third phase, murmurs and clear taps, bespeak cardiac and arterial integrity and circulatory efficiency, while on the other hand, a prolongation of those of the fourth phase, dull taps at the expense of the second and third phases indicates a reversal of these favorable conditions.

As a more comprehensive statement of what can be learned from auscultatory sequence reading I quote from the second paper by Dr. Goodman and myself[5] on this subject:

> Aside from the value of the persistence of the fourth phase in aortic insufficiency, little of diagnostic value has developed in regard to the length of any individual phase. Advantage has been derived, however, from studying the changes in the sequence readings, especially in decompensating cardiac lesions, as the patient improves or not. Or to put it another way, sequence readings have a functional rather than an organic significance.

To this I would add that in pneumonia, especially, is found a fruitful field for its usefulness.

2. Korotkow: (Quoted by Ettinger.) Ettinger: Wien. klin. Wchnschr., 1907, p. 992. Gittings, J. C.: Auscultatory Blood-Pressure Determinations, Arch. Int. Med., Aug. 15, 1910, 196. Goodman and Howell: Univ. Penn. Med. Bull., 1910, xxiii, 469. Fischer: Deutsch. med. Wchnschr., 1908, p. 1141.

3. Warfield, L. M.: Studies in Auscultatory Blood-Pressure Phenomena, I. The Experimental Determination of Diastolic Pressure, Arch. Int. Med., Sept. 15, 1912, p. 258, Interstate Med. Jour., 1912, xix, 856; THE JOURNAL A. M. A., Oct. 4, 1913, p. 1254.

4. Weysse and Lutz: Am. Jour. Physiol., Dec. 1, 1913, xxxii, No. 8.

5. Goodman and Howell: Am. Jour. Med. Sc., 1911, p. 146.

As regards the characteristics of the auscultatory sequences in pneumonia, I would preface my remarks by saying that I do not recommend an attempt at recording the phases in their actual millimetric length, as this would in the majority of cases be impossible, but rather their individual scrutiny as to whether present or absent, long or short, or good or bad (that is, characteristic or not), in fact, with about the same thoughts in mind as one would have in listening to the heart itself.

Indeed, the heart sounds and those heard over the artery are comparable in a general way. Other things being equal, strong, clear-cut sounds over the artery are as indicative of a state of circulatory well being as are sounds of similar nature heard at the apex. Likewise indefinite, muffled or irregular sounds are as worthy of the opposite interpretation as are like sounds over the heart.

While the second and third phases when generously present are taken as standing for circulatory strength, this interpretation must be modified by the way in which these phases measure up to the standard in the quality of their individual sounds. Thus a very clear and much-prolonged third phase is found with arteriosclerosis, cardiac hypertrophy and accentuated aortic second sound. It can be seen, therefore, that in the third phase information can be gleaned regarding both the heart and the degree of peripheral resistance. For this reason it, of all the phases, is the most enlightening one in pneumonia.

Again I emphasize that more is to be gained from watching the changes in a succession of sequences than from isolated observations, for, indeed, one patient may be quite comfortable with a sequence which in another promises the worst.

The second phase is the one most quickly lost in pneumonia and therefore its presence is of good augury. As already suggested, it is principally in the general character and duration of the clear tap of the third phase that information as to the degree of circulatory efficiency must be sought.

In pneumonia I take all clear tapping sounds as of good import whether heard in that part of the sequence usually assigned to the third phase or not. To all weak or muffled sounds, in the same way, the opposite significance is given. When the clear tap is lost and the sequence appears as a succession of dull muffled sounds from systole downward, a high grade of peripheral relaxation and secondary cardiac exhaustion can be inferred. When to this, arhythmia is added, the worst picture is drawn.

The preceding statements would not in themselves be so interesting were it not for the fact that such changes in the sequences can occur without a corresponding change in the Gibson ratio. It would seem, therefrom, that a laboring heart and its relaxed vessels can more easily sustain a stationary Gibson ratio than a stationary auscultatory sequence.

It is in the advance information thus afforded that the auscultatory sequence can claim its unique place in the following of a pneumonia case. Furthermore, the same kind of information is at hand in those cases which do not lend themselves to Gibson's dictum. As it is the little things that so often turn the tide for or against us in pneumonia, I feel that here we have one of the little things that we can't afford to miss.

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VARIATIONS IN THE STRENGTH OF THE WASSERMANN REACTION IN UNTREATED SYPHILITIC INFECTIONS *

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The complement-fixation test for syphilis has proved to be of the greatest value in the diagnosis of the disease, and as a control of the efficiency of treatment. I believe that this statement will be accepted by all students of the subject who have had a wide experience in the application of the test, despite the adverse reports and criticisms of some syphilographers who are loath to admit that the opinions of centuries concerning certain clinical conceptions of the disease, and the ease with which it may be cured, have received a death-blow, as shown by the positive results obtained with this test in innumerable cases thought to have been cured by the older methods of treatment.

Certainly, my own experience, covering over 15,000 Wassermann tests made during my service at the Laboratory of the Army Medical School, Washington, D. C., and at this laboratory, has convinced me that in this reaction we possess the most valuable test that we have of the presence of syphilitic infection, a positive reaction being the most delicate and persistent of all of the symptoms of syphilis, and that, in the light of our present knowledge, to consider a patient as cured of the disease so long as a positive Wassermann reaction is present, is not only irrational, but most unjust to the patient, in that it exposes him to almost certain relapse in the future, and renders the infection of innocent individuals more than probable.

Valuable as this test is, however, in the diagnosis and as a guide to the treatment of syphilis, there are many phenomena connected with it that are, as yet, unexplained, and it is one of these that forms the subject of this contribution, that is, the extreme variation in the strength of the reaction sometimes observed in untreated patients suffering from syphilitic infection.

During the routine examination of serums for the Wassermann reaction at the laboratories mentioned, I have frequently observed cases in which the reaction varied from a strongly suspicious one to a plus-minus or negative one within intervals of one or two weeks, while in a few cases a positive reaction has become negative within the same period of time, the patients in the meanwhile having received no treatment. In all of these instances subsequent tests of the blood-serum resulted in a positive reaction, so that it was evident that these variations in the result must have depended on the reduction or absence of the body or bodies in the patient's serum which produce complement fixation in the presence of an efficient antigen.

The fact that the blood-serum of an undoubted syphilitic patient may, during certain intervals, give a negative reaction, in the absence of specific treatment, and when previous and subsequent tests are positive, is of considerable importance in the interpretation of a negative result in any case suspected of the disease, and of significance in the study of the exact nature of this reaction. In my experience these anomalous results have not been very numerous, but their occurrence, together with the criticisms of some writers who have

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had a similar experience, and who therefore appear to consider the test untrustworthy, renders an experimental study of the subject of value, and in this paper I shall give in detail the results obtained from the daily titration of the blood-serum of ten untreated cases of syphilis, the titrations covering seven days in each instance.

While, *a priori*, there would appear to be no reason why the strength of the complement-fixation reaction in the blood-serum of untreated syphilitics should not vary markedly from day to day, this phase of the subject appears to have received little attention, and we have grown to consider the strength of the reaction as an invariable quantity, the discordant results that have sometimes been obtained with the reaction either being imputed to the serologist or considered as proof of the unreliability of the test. If this paper does nothing more, it will demonstrate that marked daily variations do occur in the strength of the reaction and that these must be most carefully considered in the interpretation of negative or anomalous results.

MATERIAL AND TECHNIC

Ten patients suffering from undoubted syphilitic infection were selected for the experiments. Of these, two were in the primary stage of the disease, four in the secondary stage, and four in the latent stage of syphilis. The only patients who had received any treatment were those in the latent stage and it had been over a year since any treatment had been administered to these cases. The two patients in the primary stage showed typical chancres, and have since developed secondary lesions; the four in the secondary stage all showed typical eruptions or mucous lesions; while the four with latent infections were free from symptoms at the time of examination, but gave a typical history of infection and had presented typical symptoms in the past. All of the patients with latent infections had been treated with salvarsan about one year before these tests were made.

Most of the men were prisoners in the U. S. Military Prison, at Fort Leavenworth, and thus all chance of the strength of the reaction being influenced by the use of alcohol or by other irregularities was obviated, the men being under a rigid discipline and on a plain, wholesome diet. The serum was collected every morning in sterilized tubes and promptly tested.

As regards the technic of the test, it may be stated that it was identical with that used by myself during the past four years in the routine Wassermann work of the laboratories mentioned, being a modification of both the original Wassermann and the Noguchi technic. A human hemolytic system was employed instead of the sheep system of Wassermann, while an alcoholic syphilitic antigen was employed and the serums were always inactivated before being tested.

Each patient's blood-serum was titrated every day for one week, the quantities of serum employed being 0.02 c.c.; 0.04 c.c.; 0.06 c.c.; 0.08 c.c. and 0.1 c.c. The quantity of blood-serum used in our routine Wassermann tests is 0.08 c.c., so that this quantity may be taken as the diagnostic amount given in the tables. A control of 0.1 c.c. of the serum titrated was always used.

In the tables the sign + + indicates absolute inhibition of hemolysis, or a positive reaction; the sign + anything between absolute inhibition and 50 per cent. of inhibition of hemolysis, or a doubtful reaction; the sign + — anything between 50 per cent. of inhibition and total hemolysis, or practically a negative reaction; and the sign — total hemolysis or a negative result.

RESULTS IN THE PRIMARY STAGE OF SYPHILIS

Owing to lack of material, there were only two cases tested in the primary stage of syphilis. The men both presented typical chancres and when first tested gave a double-plus, or positive Wassermann reaction.

CASE 1.—The results obtained in the titration of the blood-serum in Case 1 are shown in Table 1. Several days before the titrations were begun the blood-serum in this case gave a double-plus reaction. The variations in the strength of the serum, as shown by the table, are most marked, of course, with the smaller amounts used but it will be noted that on three days of the test week, the amount of serum usually used as the diagnostic amount (0.08 c.c.) gave a plus, or doubtful reaction, and that this was also true of 0.1 c.c. of the serum, an amount larger than is usually employed in our routine tests. It is thus evident that if spirochetes could not have been demonstrated in the lesion present the Wassermann test in this case would have been doubtful during three of seven days. With the smaller amounts of serum the reaction varied from a plus-minus to a double-plus reaction, and on the seventh titration the smallest amount of serum used gave a double-plus reaction.

TABLE 1.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 1 (PRIMARY)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Nov. 19	+—	+	+	+	+	—
Nov. 20	+—	+—	+	++	++	—
Nov. 21	+—	+	++	++	++	—
Nov. 22	+—	+—	+	+	+	—
Nov. 23	+	++	++	++	++	—
Nov. 24	+—	+	+	+	+	—
Nov. 25	++	++	++	++	++	—

CASE 2.—The results obtained in the titration of the blood-serum of Patient 2 are given in Table 2. Several days before the titrations were begun the blood-serum of this patient gave a double-plus or positive reaction. It will be noted that while for five of the seven days during which the serum was titrated, he gave a double-plus reaction, on two days he gave a plus or doubtful reaction, and that this reaction was obtained with both 0.08 c.c. and 0.1 c.c. of serum. With smaller quantities of serum he varied more than Case 1, on two of the seven days being negative with 0.02 c.c. of serum, and at no time did this amount of serum give a double-plus reaction.

TABLE 2.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 2 (PRIMARY)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Nov. 19	+	++	++	++	++	—
Nov. 20	+—	++	++	++	++	—
Nov. 21	—	+—	+	+	+	—
Nov. 22	—	+—	+—	+	+	—
Nov. 23	+	++	++	++	++	—
Nov. 24	+	++	++	++	++	—
Nov. 25	+	++	++	++	++	—

It may be stated, then, that both of these cases of primary syphilis showed such variations in the strength of the Wassermann reaction as to have been reported doubtful had spirochetes not been demonstrable in the lesion present, even when an amount of serum in excess of that usually employed in the test was used.

RESULTS IN THE SECONDARY STAGE OF SYPHILIS

The blood-serum of four cases of secondary syphilis, presenting symptoms typical in character, was tested in the same manner and with the following results.

CASE 3.—This patient presented a few typical mucous patches in the mouth and throat and gave a history of having had an eruption covering the chest and back. Table 3 gives the results of the titration of his blood-serum. It will be noted that in this case even the smallest amount of serum employed gave a double-plus reaction each day it was tested, and that at no time during the week was there a diminution in the strength of the reaction. The case is interesting as showing how strong the reaction is in some instances and how little it varies even with very small amounts of serum.

TABLE 3.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 3 (SECONDARY)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Nov. 26	++	++	++	++	++	—
Nov. 27	++	++	++	++	++	—
Nov. 28	++	++	++	++	++	—
Nov. 29	++	++	++	++	++	—
Nov. 30	++	++	++	++	++	—
Dec. 1	++	++	++	++	++	—
Dec. 2	++	++	++	++	++	—

CASE 4.—This patient had mucous patches and a slight secondary eruption at the time of examination. The results of the titration of his blood-serum are given in Table 4. In this case the only variation in the binding power of the serum was noted in the smallest quantity used, on two days 0.02 c.c. of the serum giving a plus reaction. The diagnostic amount of serum (0.08 c.c.), however, always gave a double-plus reaction, so that in this and the preceding case it may be stated that no variation of diagnostic importance occurred during the titrations.

TABLE 4.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 4 (SECONDARY)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Jan. 3	++	++	++	++	++	—
Jan. 4	++	++	++	++	++	—
Jan. 5	++	++	++	++	++	—
Jan. 6	++	++	++	++	++	—
Jan. 7	+	++	++	++	++	—
Jan. 8	+	++	++	++	++	—
Jan. 9	++	++	++	++	++	—

CASE 5.—This patient presented mucous patches and a well-marked secondary eruption at the time of examination, and had given a double-plus Wassermann reaction a few days before the titrations were begun. Table 5 illustrates the results obtained.

TABLE 5.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 5 (SECONDARY)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Dec. 24	+—	+—	+	++	++	—
Dec. 25	—	—	—	—	+—	—
Dec. 26	—	+—	+—	+	+	—
Dec. 27	—	—	+—	+—	+	—
Dec. 28	+—	+	+	++	++	—
Dec. 29	—	+—	+—	+	++	—
Dec. 30	—	+—	+	+	++	—

The blood-serum of this patient presented marked variations in the strength of the Wassermann reaction. On one day he was absolutely negative with the usual amount of serum used in the test and only gave a plus-minus reaction with 0.1 c.c. of the serum; on another day he gave a plus-minus reaction with the diagnostic amount of serum and a plus reaction with the larger amount, while on three days he gave a plus or doubtful reaction with the diagnostic amount of serum. The variations with the smaller amounts of serum are still more marked, negative and plus-minus reactions being very numerous, while at no time did less than 0.08 c.c. of his serum give a double plus, or positive result. With the diagnostic amount of serum, namely, 0.08 c.c., he gave a positive reaction only on two of the seven days his serum was tested, and on two days he was practically negative, doubtful results being obtained on the remaining days.

This case is of great interest owing to the marked variations that occurred in the strength of the reaction in the presence of very marked secondary symptoms.

CASE 6.—This patient presented a typical secondary eruption on the chest and back at the time of examination, and gave a double-plus Wassermann reaction before the titrations of his serum were begun. Table 6 gives the result of the titrations in this case.

TABLE 6.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 6 (SECONDARY)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Dec. 5	+—	+—	+	+	++	—
Dec. 6	++	++	++	++	++	—
Dec. 7	++	++	++	++	++	—
Dec. 8	++	++	++	++	++	—
Dec. 9	++	++	++	++	++	—
Dec. 10	+—	+	+	+	+	—

Comparatively little variation occurred in the strength of the reaction in this case, but on two days the diagnostic amount of serum gave only a plus or doubtful reaction, while on one day even the larger amount of serum gave a similar reaction.

From these results in secondary, untreated, cases of syphilis, it is evident that the strength of the Wassermann reaction may vary all the way from a double-plus or positive reaction to a negative reaction, in the same patient, within an interval of a few days, and in the presence of marked symptoms of syphilitic infection. The great practical importance of this fact is apparent and must be borne in mind in the interpretation of a negative or doubtful result with this test in suspected cases of the disease.

RESULTS IN THE LATENT STAGE OF SYPHILIS

Four patients in the latent stage of syphilis were tested. All of them gave a history of definite symptoms of the disease in the past, but in none of them had active symptoms been present for a period of at least one year. All of the men had received one or two injections of salvarsan over one year ago and all gave a double-plus Wassermann reaction shortly before the titrations of the blood-serum were commenced. None of the men presented symptoms of syphilitic infection beyond enlarged inguinal and epitrochlear glands at the time of examination.

CASE 7.—Table 7 gives the result of the titration of the blood-serum in this case. It will be noted that, with the diagnostic amount of serum, this patient gave a doubtful, or plus, reaction on three of the seven days on which it was tested, and that the same type of reaction was also given with 0.1 c.c. of the serum. On two days the serum gave a double-plus reaction even with the smallest quantity used, while the same amount on five days gave a negative or plus-minus reaction.

TABLE 7.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 7 (LATENT)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Dec. 19	+—	+	+	++	++	—
Dec. 20	—	+—	+	+	+	—
Dec. 21	—	+	++	++	++	—
Dec. 22	—	+—	+	+	+	—
Dec. 23	++	++	++	++	++	—
Dec. 24	++	++	++	++	++	—
Dec. 25	+—	+	+	+	+	—

On three days the serum from this patient gave a reaction which could not be considered positive, so that it may be stated that the Wassermann test in this case would have been of little diagnostic service on three of seven consecutive days.

CASE 8.—Although no symptoms had been noted in Patient 8 for over one year, his blood-serum was very uniform in strength, and gave a double-plus or positive result on every day it was tested. Table 8 gives the result of the daily titration of the blood-serum in this case.

TABLE 8.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 8 (LATENT)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Jan. 12	+	++	++	++	++	—
Jan. 13	+	++	++	++	++	—
Jan. 14	+	++	++	++	++	—
Jan. 15	+—	+	++	++	++	—
Jan. 16	+—	+	++	++	++	—
Jan. 17	+—	+	++	++	++	—
Jan. 18	+—	+	+	+	++	—

It will be noted that on only one day did the strength of the Wassermann reaction in this case vary enough to cause a doubtful or plus reaction with the diagnostic amount of serum, and that even with the smaller amounts of serum the results were generally positive, with the exception of 0.02 c.c., which never gave a double-plus reaction. The case is of interest as showing how uniform the reaction may be in a latent case of syphilis.

CASE 9.—The blood-serum in this case varied markedly in complement-fixing strength, as will be seen by Table 9. A consideration of this table shows that, if we take the diagnostic amount of serum, or 0.08 c.c., on only two of the seven days was a positive, or double-plus, reaction obtained; that on one day the serum was negative; on one day, plus-minus; and on three days a plus reaction was obtained. With an amount of serum larger than the diagnostic amount usually employed, that is, 0.1 c.c., on two days a plus-minus reaction was obtained and on one day a plus reaction.

TABLE 9.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 9 (LATENT)

Date of Test	Amount of Blood-Serum, c.c.					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Jan. 15	—	+—	++	++	++	—
Jan. 16	—	+—	+	+	+	—
Jan. 17	+—	+	+	++	++	—
Jan. 18	—	—	+—	+	++	—
Jan. 19	—	—	—	—	+—	—
Jan. 20	—	—	+—	+	++	—
Jan. 21	—	—	—	+—	+—	—

With the smaller amounts of serum the variations in the strength of the reaction were still more striking, as will be noted by consulting the table.

CASE 10.—In so far as a positive result is concerned, this patient's serum varied even more markedly than did that of the preceding case. The results of the titration of this serum are shown in Table 10. From a consideration of this table it will be noted that with 0.08 c.c. of serum, the amount usually employed in our routine tests, a double-plus, or positive, reaction was obtained on only one day of the seven during which the serum was titrated. This patient's blood had been tested the day before the titrations commenced and gave a double-plus reaction, and since then has repeatedly given such a reaction, but it is evident that had he been tested on six of the seven days covered by titration of his serum, a doubtful or negative report would have been returned. With 0.1 c.c. of serum the reaction was positive on three of the seven days he was under examination. With the smaller amounts of serum the variation in the strength of the reaction is still more apparent.

TABLE 10.—RESULTS OF TITRATION OF BLOOD-SERUM IN CASE 4 (LATENT)

Date of Test	Amount of Blood-Serum, c.c					Control c.c.
	0.02	0.04	0.06	0.08	0.1	0.1
Jan. 15	—	—	—	+—	+	—
Jan. 16	—	+—	+	+	++	—
Jan. 17	—	+—	+	+	+	—
Jan. 18	—	—	+—	+	+	—
Jan. 19	—	+—	+—	+—	+—	—
Jan. 20	—	+—	+—	+	++	—
Jan. 21	+—	++	++	++	++	—

DISCUSSION OF THE RESULTS

Briefly summarized, the results obtained in this investigation may be stated as follows: In one case of primary syphilis, a plus or doubtful complement-fixation reaction was obtained on three of seven days, the reaction on four days being double-plus, or positive; in another case, a plus or doubtful reaction was obtained on two of seven days. In one case of secondary syphilis, a negative reaction was obtained on one day, a plus-minus on one day, a plus or doubtful reaction on three days and a positive or double-plus reaction on two days; in another secondary case a plus or doubtful reaction was obtained on two of seven days. Of the latent cases, one gave a plus-minus reaction on two days and a plus reaction on four days of the week, a positive reaction being obtained only on one day; another gave a negative reaction on one day, a plus-minus on another, and a plus reaction on three days. The third latent case gave a plus or doubtful reaction on three of seven days, while the fourth case gave a double plus reaction on all but one day of the seven.

The most important practical points brought out by these observations on the daily titration of the blood-serum of untreated syphilitics are that great variations may occur in the complement-binding power of the serum in patients uninfluenced by any kind of treatment; that a single negative or doubtful Wassermann reaction is of no value in excluding syphilis; and that the occurrence of these natural variations must be carefully considered in the diagnosis and the control of treatment of the disease.

There can be no question regarding the technic employed in the titration of these serums as it was identical with that used in our routine Wassermann work, a technic that has been thoroughly controlled and checked by thousands of reexaminations of patients under treatment during the past four and a half years in which I have employed it. Any interference with the reaction which might have been brought about by

excesses of any kind is thought to be impossible, as the patients, with two exceptions, were military prisoners, under strict discipline and on an ordinary diet. The influence of alcohol in rendering a positive Wassermann test negative, first called attention to by Nichols and myself,[1] was one of the reasons that prisoners were selected for these tests, and I believe that this disturbing factor was entirely eliminated.

It would appear, then, that marked variations in the strength of the Wassermann reaction may occur, from day to day, in the blood-serum of untreated syphilitic patients, and the question arises: To what are these variations due? In order to answer this question it would be necessary to know the exact cause of complement-fixation in syphilis, a problem still unsolved, although many interesting, attractive and plausible theories have been brought forward by numerous investigators to explain this phenomenon.

That complement-fixation in syphilis is not always a true antigen-antibody reaction is proved by the fact that antigens prepared from normal tissues are efficient, and when such an antigen is used it has been shown that complement-fixation is due to the reaction between the lipoids present in the antigen and lipotropic substances present in the patient's serum. That a true antigen-antibody reaction does occur, however, in certain instances, is proved by the positive results obtained with antigens made from pure cultures of *Spirochaeta pallida*, as shown by Noguchi,[2] Nichols and myself,[3] and Kolmer, Williams and Laubaugh.[4] When an antigen prepared from a fetal syphilitic liver, rich in spirochetes, is employed, I am of the opinion that the complement-fixation reaction obtained is often of a dual nature, there being a specific reaction between the substances extracted from the spirochetes and antibodies in the syphilitic serum, and a non-specific reaction between lipoids present in the extract and lipotropic substances in the serum.

I believe that it may be accepted as proved that there exist in the blood-serum of syphilitics specific antibodies and lipotropic substances that are capable of fixing complement when brought into contact with an efficient antigen. It has also been demonstrated that these bodies depend for their origin on the presence in the body of the spirochetes, for when the latter disappear from the lesions in experimental animals, as the result of treatment, the complement-fixation reaction also disappears. Whether these substances are produced by the reaction of the tissues to endotoxins liberated by the breaking up of the dead spirochetes, to toxins produced by the living spirochetes, or to the presence in the blood of the toxins themselves, are all mooted questions, but it is evident that there must be a certain amount of them in the blood-serum before a positive Wassermann reaction can be obtained. This amount would be expected to vary greatly with the amount of infection; that is, with the number of spirochetes, and from a practical point of view, so far as the correct interpretation of the reaction is concerned, it is immaterial how these substances are produced. The fact must be recognized that in untreated cases of syphilis the Wassermann reaction may vary all the way from a positive to a negative within a short period of time, and with the usual amount of serum employed in the test.

The observations detailed in this contribution make still more evident the absolute worthlessness of a single negative reaction in eliminating syphilis in a suspected person. In several of the cases under discussion the blood-serum, if tested only on certain days, would have given a negative, or practically negative, result, although serum from the same persons had previously given a positive result and again became positive within a day or two. If this be true of untreated cases, some of them showing severe lesions of the disease, it will certainly be found true of a greater number of latent and treated infections, the very class of cases in which a negative Wassermann test is so often considered decisive as to the absence of the disease. The present propaganda for a eugenic law, in which a single, or even two, negative Wassermann reactions are to be relied on to exclude syphilis, does not take into consideration the very slight value of a negative result, and while such a law would be a step in the right direction, a dependence on such a standard alone will inevitably lead to a false sense of security and to the infection of innocent persons.

In conclusion, it may be stated that the daily titration of the complement-fixing power of untreated syphilitics indicates the importance of repeated examinations, when a negative result is obtained, before the patient is considered free from infection. The results also explain some of the anomalous reactions that have been recorded in the literature, and emphasize the need of great caution in the interpretation of negative or doubtful Wassermann reactions.

I desire to express my thanks to Major Kent Nelson, Medical Corps, U. S. Army, and to Capt. Thomas D. Woodson, Medical Corps, U. S. Army, for the opportunity of making the tests recorded in this paper.

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THE LUETIN CUTANEOUS REACTION FOR SYPHILIS *

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Those who have reported results with the luetin cutaneous reaction for syphilis are practically agreed in the conclusion that the test is valueless in primary and secondary (untreated) syphilis and is of value only in the later stages. Over 1,500 tests have been reported in cases of late syphilis and 2,000 in control cases by over twenty-five observers. The percentages of positive reactions reported by different authors vary about as follows:

Tertiary and latent, from 65 to 100 per cent.
Congenital, from 10 to 96 per cent.
Cerebrospinal "parasyphilis," from 30 to 80 per cent.

Variations such as these between the reports of a number of observers are not surprising except in the wide differences in congenital syphilis. For this form, Kaliski reports one positive test in ten cases, while Brown reports thirty positive in thirty-four cases, and Noguchi reports twenty-three positive in twenty-four. The total number of tests in congenital syphilis is still very small, and more reports are evidently needed.

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It is generally agreed that the luetin test, when positive, is highly specific for syphilis. Out of 2,000 control cases, only fourteen are reported as giving positive reactions (twelve of these by Kaliski). These cases were: tuberculosis (four cases); nephritis, endocarditis, cirrhosis, gout, myasthenia gravis, multiple sclerosis, scrofuloderma, and psoriasis. It seems impossible to prove whether some of these patients may not have had latent syphilis. Two patients were seen in the series to be reported here, giving positive reactions, in which syphilis could not be proved. Both were clinically diagnosed as joint tuberculosis, but left the hospital before the result of a therapeutic test for syphilis could be observed.

METHOD OF INJECTION OF LUETIN[1]

The luetin, which is an emulsion of a killed culture of *Spirochaeta pallida,* is mixed with equal parts of normal salt solution, and 0.07 c.c. of this mixture is injected with a tuberculin syringe, as superficially as possible into the skin, so as to form a wheal about 5mm. in diameter. In a negative reaction, the lesion may become slightly reddened but never becomes larger than the original wheal and disappears in three or four days. In a positive reaction, a raised papule appears, usually within from twenty-four to forty-eight hours, with rather diffuse induration and surrounding redness. The whole increases in size in from four to six days, reaching a total diameter of not less than 8 mm. and usually from 10 to 20 mm. It then fades during from three to six days more, some reactions being still evident after twenty or thirty days. The papule frequently goes on to pustule formation, but rarely requires opening, and there is very little pain and tenderness in proportion to the size of the lesion. Constitutional reactions are rare and very slight when they do occur. None were seen in the cases in this series.

REPORT OF TESTS

Through the courtesy of Dr. Noguchi, in supplying us with luetin, we have been able to perform 150 tests in 120 cases (ninety cases on the medical wards and also thirty cases on the orthopedic ward, done by Dr. J. F. O'Farrell, who very kindly furnished the records for this report). There were thirty-six cases of syphilis and eighty-four controls. All of the control cases gave negative reactions with the exception of the two cases of joint disease noted before. The results in the cases of syphilis can best be shown by the accompanying table.

LUETIN AND WASSERMANN TESTS IN THIRTY-SIX CASES OF SYPHILIS

	No. of Cases	Luetin Test, Positive	Wassermann, Positive	Luetin Pos. with Negative Wass.	Luetin Positive, Without Treatment	Luetin Neg. before Treatment and Pos. after Treatment
Tertiary and latent	22	14=64%	18*=80%	3	8†	2
Cerebrospinal parasyphilis	12	5=42%	9 =75%	1‡	1	2
Congenital..	2	0	1	..	..	..

* The figures in this column are high because they include some cases in which the Wassermann reaction was negative in the blood and only weakly or moderately positive in the spinal fluid.

† It is well understood that the luetin reaction is more often positive in treated than in untreated cases, but the low number here shown of cases positive without treatment is partly due to the fact that many of the patients entered the hospital with the diagnosis already made, and treatment was begun at once before the luetin reaction could be observed.

‡ Blood Wassermann negative four times. The Wassermann on the spinal fluid was weakly positive.

1. For method of preparation of luetin, classification of types of reaction, etc., see Noguchi: Jour. Exper. Med., 1911, xiv, 557; Experimental Research in Syphilis, with Especial Reference to Spirochaeta Pallida (Treponema Pallidum), THE JOURNAL A. M. A., April 20, 1912, p. 1163.

The relative values of the luetin and Wassermann tests in this small series of cases is evident from the table. The Wassermann reaction is positive in a higher percentage of cases of late syphilis than is the luetin. The value of the luetin reaction appears in the small number of cases of syphilis in which it is positive, while the Wassermann is negative (four out of thirty-six cases). In these cases it is of definite value, and it is for this reason that the test is now used on the medical service at this hospital.

REPEATED INOCULATIONS

In thirty cases giving negative or doubtful results on first inoculation, the test was repeated after an interval of from ten to sixty days, in an effort to determine whether or not it is possible to sensitize either a normal person or a syphilitic by one inoculation so that a second injection will give a positive reaction.

Of thirteen control cases, none reacted positively on second inoculation. Of fifteen luetic cases giving negative reactions, five gave positive reactions on second inoculation. It is impossible to say, however, whether this was due to sensitization by the first injection or to treatment, since all five patients were given either salvarsan or mercury before the second injection.

In two cases, the second injection gave a doubtful reaction. One of these was a case of infectious arthritis. The second injection of luetin was given two weeks after the first, and the following day, there appeared at the site of the first injection a superficial papule with an area of surrounding hyperemia, which increased in size during twenty-four hours to a diameter of 10 mm. and then rapidly faded. On account of the short duration of the reaction and the lack of induration the test was not called positive.

The second case was also one of chronic infectious arthritis of eight months' duration. Repeated Wassermann tests were negative and there was no history of lues. The second luetin injection produced a superficial papule with an area of hyperemia 10 mm. in diameter, in twenty-four hours, which faded during the next twenty-four to forty-eight hours. Three days later 0.3 gm. of salvarsan was given as a therapeutic test, without any noticeable effect at the site of the luetin injection. Another similar dose of salvarsan was given twelve days later, and the following day a reaction appeared at the site of the second luetin injection which ran a course similar to the previous reaction. Whether or not this may have been a case of luetic arthritis it is impossible to say, but the improvement of the patient, which had been slow with frequent relapses, was rapid and very marked after the beginning of the salvarsan treatment.

TYPES OF REACTIONS

Besides the original types of reactions described by Noguchi—the papular, pustular and torpid forms—there have since been described several cases of the formation of a hemorrhagic exudate, the lesion usually breaking spontaneously and not running a more severe or longer course than the pustular. Two of the reactions in this series were of the hemorrhagic type.

Still another type of reaction has been noted in two cases in this series, characterized by the appearance

within from twenty-four to forty-eight hours of a light purplish or violet areola from 35 to 40 mm. in diameter around a small, slightly indurated, reddened papule. During the next three or four days, the large areola fades, and at the same time the central reddened papule increases in size, becomes more indurated, and runs the course of an ordinary papular reaction.

DOUBTFUL REACTIONS

In 120 tests, there were but five reactions which were not typically negative but which were too superficial and faded too rapidly to be called positive. One of these was in a case of syphilis which gave a positive reaction on second inoculation. Two were apparently non-syphilitic, and the other two have just been described.

CONCLUSIONS

The luetin test is of practical value in a few cases of late syphilis (four out of thirty six) in which it is positive when the Wassermann is negative.

Second injections apparently do not give positive reactions in non-syphilitic cases.

RETRO-AORTIC LEFT RENAL VEINS *

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CHICAGO

The complicated development of the inferior vena cava is responsible for numerous anomalies of the abdominal veins, since four of the veins present at varying stages of embryonal life take part in its formation. Among these anomalies the passage of the left renal vein behind the aorta has received least attention in medical literature, and I have succeeded in finding only sixteen instances of the condition reported.[1] Darrach,[2] in 605 dissections of the cat, an animal in which the venous system is prone to many variations, make no mention of this condition, and the character of the examination reported by Darrach leaves no doubt in the mind of the reader that had such an anomaly been present it would have been observed.

It is well known that the early symmetrical distribution of the venous channels in the embryo is soon lost. Ventral to each postcardinal vein, branches coming from the mesentery by a series of longitudinal anastomoses form a second vessel parallel to each of the postcardinal veins which open at each end and by numerous anastomoses throughout their length into the postcardinal veins. These vessels, termed by Lewis[3] the subcardinal veins, later anastomose with each other by a cross branch (*A*, Fig. 1) just below the superior mesenteric artery. This large anastomotic branch is continued to the postcardinal vein on each side, all other anastomoses between these channels tending to disappear at this time. The primitive, and later the permanent kidneys are connected with the postcardinal veins at this level. From this point upward the right subcardinal vein enlarges rapidly at the expense of the right postcardinal, and empties into the ductus venosus. The ductus venosus becames the permanent uppermost or first portion of the inferior cava. The enlarged right subcardinal vein, which comes to be the chief channel for the blood returning from the lower extremities, is therefore the second vessel which becomes a permanent part of the inferior cava.

According to F. Hochstetter,[4] the portion of the left subcardinal vein above the anastomosis referred to becomes the left suprarenal vein of the adult, while below the anastomosis the subcardinal veins cease to exist as blood-vessels but become lymph-channels.

The portion of each postcardinal vein immediately above the anastomosis (*A*, Fig. 1) disappears. At about this time a second important anastomosis develops between the postcardinal veins at the level of the fifth lumbar vertebra (*C*, Fig. 2). The right postcardinal vein, enlarging rapidly, constitutes the permanent lower portion of the inferior cava (Fig. 3). The left subcardinal vein between this anastomosis and the left renal vein disappears except that small portion of its upper part which forms the left spermatic vein (Fig. 3).

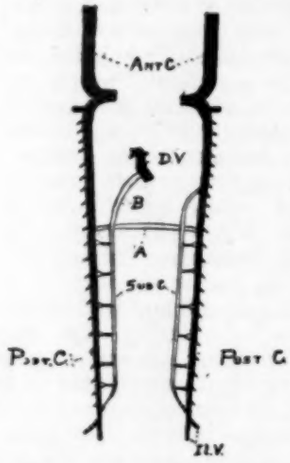

Fig. 1.—Relation between cardinal veins, subcardinal veins and the ductus venosus at an early developmental period. In this and the accompanying illustrations the abbreviations have the following meanings: *D. V.*, Ductus venosus; *Sub C.*, subcardinal veins; *Ant. C.*, anterior cardinal veins; *Post C.*, posterior cardinal veins; *Il. V.*, iliac veins; *Supra C.*, supracardinal veins; *R. V.*, renal veins; *Sp. V.*, spermatic veins; *Hem. V.*, hemiazygos veins; *Az. V.*, azygos veins; *Cor. S.*, coronary sinus; *A*, anastomotic branch between the subcardinal veins; *B*, upper portion of the right subcardinal vein; *C*, anastomotic branch between the posterior cardinal veins; *D*, anastomotic branch between the azygos and hemiazygos veins; *E*, site of the left postcardinal vein.

For a time the ureters lying dorsal to the postcardinal veins are surrounded by a venous ring produced by the development of a channel, which in turn is formed by the longitudinal anastomosis of veins draining the posterior abdominal walls. These newly formed vessels are called the supracardinal veins.[5] The ventral portion of this loop formed by the postcardinals disappears. On the right side the supracardinal vein persisting forms the third portion of the vena cava.

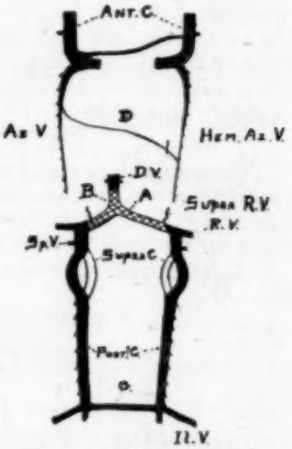

Fig. 2.—Intermediate stage in the development of the venous system.

In recapitulation, the inferior cava (Fig. 3) comes to consist of (1) the proximal portion of the ductus venosus; (2) the proximal portion of the right subcardinal; (3) the right supracardinal, and (4) the distal portion of the right postcardinal veins.[6]

According to Hochstetter, who is confirmed by other investigators, in dealing with anomalies of the renal veins, particularly the left renal vein, we have to do with vestiges of the original postcardinal channels. The instances in which a left renal vein passes behind the aorta, or is represented by one or more branches passing behind the aorta, are results of primitive anastomoses

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* From the Pathological Laboratory of Rush Medical College.

1. This search has not been exhaustive, but has included the Anatomischer Anzeiger, the Ergebnisse der Anatomie and Entwickelungsgeschichte, the Bulletin de la Société anatomique de Paris, the Centralblatt für allgemeine Pathologie und pathologische Anatomie, the Beiträge zur pathologischen Anatomie und zur allgemeinen Pathologie (Ziegler's), Virchows Archiv für pathologische Anatomie und Physiologie und für klinische Medicin, and a number of text-books on anatomy, pathology and embryology.

2. Darrach, William: Variations in the Post Cava and its Tributaries as Observed in 605 Examples of the Domestic Cat, Proc. Assn. Am. Anatomists, 1906-1908, i, 30.

3. Lewis, F. T.: The Development of the Vena Cava Inferior, Am. Jour. Anat., 1902, i, 229.

4. The work of this author is cited by all writers on this subject, and as complete a reference as any, perhaps, may be found appended to a work by C. Meyer: Beitr. z. path. Anat. (Ziegler's), 1908, xliv, 1.

5. McClure, C. F. W., and Huntington, G. H.: Development of the Post Cava and Tributaries in the Domestic Cat, Am. Jour. Anat., 1907, vi.

6. Lewis, F. T.: Am. Jour. Anat., 1902, i, 229.

between these embryonal channels, the postcardinal veins which, instead of atrophying as they normally do, have persisted.

That anastomoses do exist between these postcardinal veins during embryonal development has been definitely shown by Davis,[7] who found as many as seventeen cross-branches between the postcardinals at one time during their development, and it is therefore not strange that one or more of these anastomosing branches frequently persist as a retro-aortic renal vein.

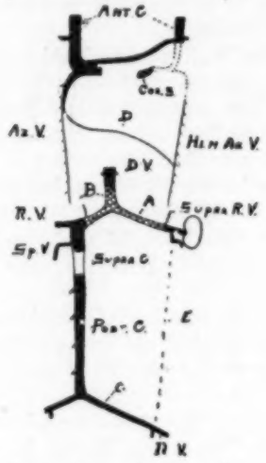

Fig. 3.—The embryonal channels which have united to form the vena cava of the adult.

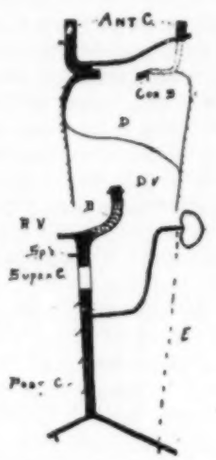

Fig. 4.—A primitive anastomosis such as has existed in six of the cases reported.

In reviewing diagrammatically the reported anomalies, Figure 4 represents the condition, an old anastomosis between the postcardinal veins, present in six of the sixteen, four reported by Gosset,[8] one by Gladstone[9] and one by Tichomirow.[10]

Figure 5 illustrates approximately the condition present in another example studied by Gosset, and in one reported by N. A. Batujew.[11]

Figure 6 represents the persistence of an anastomosis of the postcardinal veins in still another case reported by Gosset. Here the conditions are not very unlike those represented by Figure 5.

In an article discussing twelve malplaced kidneys, Meyer[12] has incidentally described seven in which the left renal vein passes behind the aorta. One of these instances is particularly interesting in that, according to Meyer, the left renal vein was formed by the persistent left cardinal, which entered the inferior cava at approximately the level of the point of entry of the right vein and behind the aorta (illustrated by Figure 7).

To these sixteen examples of anomalous renal veins I wish to add ten, records of which are in the files of the pathologic laboratory of Rush Medical College. Specimens 1, 2, 3, 4, 5, and 6 are identical and are the simplest type, in that, in each case, but one left renal vein is present, and this vein passes downward and to the right posteriorly to the aorta and enters the cava approximately 8 cm. below the mouth of the right renal vein (illustrated by Figure 4).

The fifth case has a single vein leaving the hilum of the left kidney which divides into two branches after passing downward a distance of 4 cm., both of these passing behind the aorta and entering the cava at different levels, the mouth of the upper branch being 4 cm. above that of the lower. This instance is similar to those reported by Gosset and Batujew (Fig. 5).

The remaining cases are more complex in their arrangement. In one of these (Fig. 8) the kidney is drained by one vein which, however, divides into three branches before entering the cava, one passing in front and two behind the aorta, emptying directly into the cava. From the posterior surface of this horizontal left renal vein two smaller branches are given off, each of which passes behind the aorta, emptying into the cava below the mouth of the horizontal branch. The superior or first posterior branch arises, as above stated, at a point 2.5 cm. to the right of the hilum of the kidney, passes behind the aorta parallel with the anterior branch and turns downward just before it emerges from behind the aorta, emptying into the cava 1 cm. below the point of entry of the branch first described. The second or inferior posterior branch arises from a point 2 cm. to the right of the hilum of the kidney and just below the point of the left margin of the aorta, turns to the right and joins the cava 4 cm. below the horizontal, anterior branch. The combined volume of the lumen of the two posterior branches is approximately equal to one-third that of the anterior branch. The right kidney of this specimen has a double pelvis with a separate artery and vein, for each, the lower venous channel emptying into

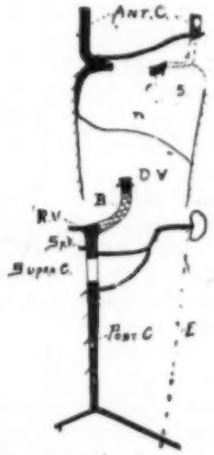

Fig. 5.—Persistent anastomoses present in a case reported by Gosset, and one reported by Batujew.

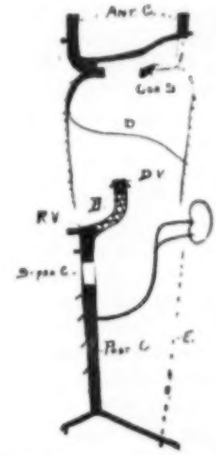

Fig. 6.—The condition present in one of the cases reported by Gosset.

the cava at a point on a level with the mouth of the upper retro-aortic vein of the left kidney.

The seventh specimen which I studied is an example of the so-called sigmoid kidney or a horseshoe kidney in which one arm of the shoe is imperfect. The lower pole of the left kidney is fused with the lower pole of the right, the upper pole of this organ being displaced to the left and partly behind the vena cava, while the left kidney lies anterior to the aorta and cava, its upper

7. Davis, D. M.: The Origin of the Vena Cava, Am. Jour. Anat., 1911, x, 461.
8. Gosset, A.: Contribution à l'étude du développement de la veine cave inférieure et des veines rénales, Bull. Soc. anat. de Paris, 1898, lxxiii, 341.
9. Gladstone: A Case of the Left Renal Vein Passing Behind the Aorta and the Bearing of These Abnormalities on the Development of the Abdominal Veins, Jour. Anat. and Physiol., vi, Part 3, p. 225.
10. Tichomirow: Reviewed by L. Stieda: Bericht über die anatomische, histologische und embryologische Literatur Russlands für 1893, Ergebn. d. Anat. u. Ent., 1893, iii, 383.
11. Batujew: Reviewed by L. Stieda: Bericht über die anatomische, histologische und embryologische Literatur Russlands, 1896-1897, Ergebn. d. Anat. und Ent., 1897, vii, 431.
12. Meyer, O.: Zur Kenntniss der Gefässe einseitig kongenital verlagerter Nieren und Hufeisennieren, Beitr. z. path. Anat. (Ziegler's), 1908, xliv, 1.

margin just below the point of bifurcation of the aorta. The combined weight of these kidneys is somewhat larger than normal. The left, or in this case the anterior, kidney is supplied by two arteries and two veins. The smaller vein passes upward from the hilum and enters the cava at a point on the anterior surface of the great vein 2 cm. above the level of the mouth of the iliac veins. The second and larger left renal vein emerges from the hilum of the kidney, passes upward and to the left, winding around the iliac artery and passing behind the aorta, enters the cava on the same plane, in which the first-mentioned branch does and at a

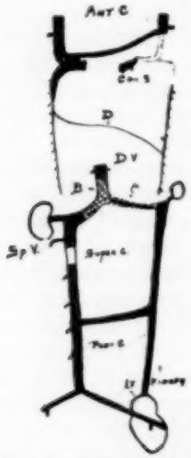

Fig. 7.—O. Meyer's case, a persistent left postcardinal vein in conjunction with a retro-aortic left renal vein.

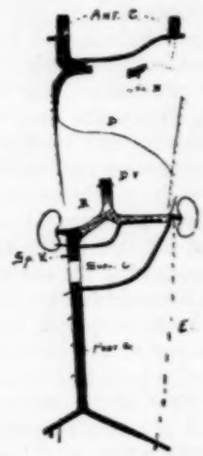

Fig. 8.—Two retro-aortic left renal veins present in the first case here reported. A left renal vein passing anteriorly to the aorta is also present, as illustrated.

point but a few millimeters lateral to it. The diameter of the lumen of this branch is the same throughout and is approximately three times greater than that of its fellow which passes from the pelvis to the anterior surface of the cava. Its length is 10 cm., while that of the former is 5 cm. The left suprarenal vein empties as usual into the upper surface of the retro-aortic branch, while the left spermatic empties into it at its inferior margin (Fig. 9).

The eighth specimen is an example of the persistence of the left postcardinal vein (Fig. 10). A single vein passes from the hilum of the left kidney toward the right for a distance of 3.5 cm., where it divides into two branches, the superior and smaller of which passes horizontally behind the aorta, emptying into the vena cava 1.8 cm. below the mouth of the right renal vein; the inferior branch passes downward a distance of 2 cm. from the point of bifurcation, then turning to the right passes behind the aorta and ends in the cava 4.5 cm. below the point of entry of the right renal vein. The left suprarenal vein, according to Hochstetter the remnant of the left subcardinal, empties into the left renal vein just before its bifurcation. The left spermatic vein empties into the inferior branch just after its division. One centimeter below the point of entry of the spermatic vein a large vein lying just to the left of the spinal column and parallel with it also empties into the descending portion of the inferior posterior branch. The vein originates from the left common iliac vein, which in this case is double, one part continuing on and joining the right common iliac to form the inferior cava, while the other at a point 6 cm. from the point of fusion of the two common iliacs turns upward on the left side of the vertebral column emptying, as before stated, into the inferior, posterior left renal vein. There is a small anastomosing branch between the two left iliac veins at the point at which the one turns upward to join the left renal vein. There is a second anastomosing branch between this left ascending branch and the inferior cava which is horizontal in direction, lies behind the aorta and is 3 cm. below the level of the inferior posterior left renal vein. For reasons which will be stated later, I believe that this anomalous vein is the persistent post-renal part of the left cardinal vein.

Instances of the persistence of both postcardinal veins have been recorded from time to time until now, though somewhat more numerous than anomalous left renal veins such as have been described, their number is approximately from twenty-five to thirty.

There is to my knowledge in the literature but one case of a postaortic left renal vein in conjunction with a persistent left cardinal vein, this being Meyer's specimen (Fig. 7), and in this instance the left kidney has a malposition.

In reviewing the recorded anomalies of persistent postcardinal veins it would seem that the authors have not given sufficient thought as to the possibility of their cases being abnormally large or anomalous lumbar veins, though in their own minds they may have completely ruled out such a possibility. There can be no doubt that the specimen represented by Figure 1 is one in which both an early embryonal renal and postcardinal condition has persisted, and with Meyer's case, which is by no means so perfect a specimen, makes the second example of the kind on record.

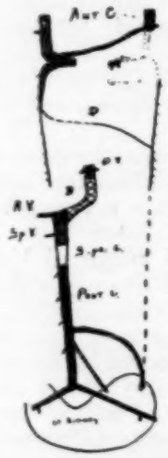

Fig. 9.—Illustrating the second case, the kidney in this instance being misplaced.

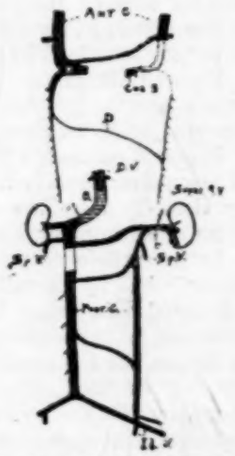

Fig. 10.—Illustrating the final case, in which the postrenal left postcardinal is present in conjunction with two retro-aortic left renal veins. The double left iliac vein and the anastomotic branch between the inferior cava and the left postcardinal are also represented.

That such a condition might exist is altogether possible, and the evidence in assuming the case to be one of persistent postcardinal vein lies in the following:

1. The left spermatic yein is given off from the descending portion of the inferior, posterior left renal vein in conjunction with the anomalous stem.

2. The channel under consideration has the proper location and direction for a posterior left cardinal vein.

3. The size of the channel warrants this belief.

4. The presence of an ileolumbar vein in connection with the external iliac vein on the left side is evidence that this is not a lumbar vein.

5. The reduplication of the left common iliac, one branch of which empties into this vein, undoubtedly has been an important etiologic factor in the persistence of this vein and is additional evidence.

All the recorded cases of retro-aortic left renal veins follow the general rule that all are on the left side, all have an oblique course and all enter the vena cava posterior to the aorta.

One might theoretically assume that in the recumbent position there would be more constriction (compression) of these retro-aortic veins between the aorta anteriorly and the vertebral column posteriorly than in the erect position. At least, it seems reasonable to believe that the abdominal viscera falling to the sides of an individual on his or her back and deriving their blood-supply from the aorta would put tension on the branches of the aorta which supply them and pull the aorta closer to the spinal column. Current explanations for orthostatic albuminuria are concerned with interference with the circulation of the kidneys. It seems appropriate to suggest a relationship between these retro-aortic renal veins and that condition known as hypostatic albuminuria, in which the urine is entirely free from albumin while the person is erect, but appears when he lies on his back. Falkenheim[13] has reported such an instance:

> The patient's urine was free from albumin after rising in the morning at 6 o'clock and remained free until retiring at 9 p. m. At 12 o'clock midnight, 3 and 6 o'clock the urine contained increasing amounts of albumin. If the patient went to bed at noon and remained there until midnight, specimens of urine examined during this interval contained albumin; and if he sat in a chair from midnight until the next morning the urine during this time was found to contain no albumin.
>
> Further observation established the fact that the position which the patient assumed in bed altered the amount of albumin present in the urine. When the patient lay flat on the back or on the left side the amount of albumin was greater than if he lay on his right side.
>
> At 11 o'clock in the morning the patient's urine contained no albumin. He was placed in a sitting posture, drank two glasses of water and a catheter was passed. Specimens of urine taken from time to time were albumin-free.
>
> The patient was then given another glass of water, placed on his back at 12 o'clock and a catheter passed and closed. At 12:03, 2.25 c.c. of urine were obtained which was albumin-free. At 12:08, 5:25 c.c. of urine were obtained which by both the acid and the heat test was positive. At 12:13, 4 c.c. of urine were obtained which contained albumin more copiously than in the preceding test ("Eiweisz hält reichlicher als in voriger Probe"). At 12:18, a final specimen was strongly positive.

Rolleston[14] reports three similar instances. Unfortunately, post-mortem examinations were not made on these bodies.

Von Leube[15] reported that in the examination of 119 healthy soldiers, 4 per cent. of the number had albumin in the urine on rising in the morning. Felsenburg,[15] after the examination of 53 soldiers, found albumin in the morning urine in 2.12 per cent. of the instances.

There is enough of parity between the occurrence of these two conditions, the clinically observed hypostatic albuminuria and the anatomically demonstrated retro-aortic drainage of the left kidney, to at least suggest some relationship between the conditions.

13. Falkenheim: Deutsch. Arch. f. klin. Med., 1884, xxxv, 446.
14. Rolleston: Lancet, London, 1902, i, 285.
15. Quoted by Pallitzer: Beiträge zur Kenntniss der orthostatischer Albuminuria, June, 1912.

A NEW METHOD OF PREPARING MUSEUM SPECIMENS

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To the student of pathologic anatomy, the preservation of specimens with their natural colors has long been recognized as a matter of great importance, as it is by means of the accurate and artistic presentation of colors, together with the form of the original, that the pathologist is able to trace with accuracy the various tissue changes which present themselves in morbid anatomy. The wax models have disappeared; the colored pictures, presenting in the main but a superficial resemblance to the original structure, possess but a passing interest. With the work of Kaiserling, however, a new era dawned and a wealth of pathologic material was saved to the student of that important branch of medical science.

Notwithstanding the brilliant work of the Kaiserling school, a brief experience with that system soon convinces the curator that a further improvement in the method of developing colors in fresh specimens is needed. Nor can he fail to observe, in the attempted restoration of colors to old specimens, that the system of the German is strikingly deficient; for in this important feature of museum work, alcohol does not produce the desired results. Failure to restore the color in old specimens, together with the attendant cost of the alcohol, makes the discovery of a substitute for that agent a desideratum of great importance.

In presenting this preliminary note, a new method of preparing specimens, old as well as new, is substituted for the well-known alcohol procedure of Kaiserling — a method which not only avoids the pecuniary disadvantages attending the use of alcohol, but which, from the point of view of color, also results in advantages. After considerable experimentation in an endeavor to find a satisfactory substitute for alcohol, the use of a saturated solution of sodium chlorid gave such striking results, not only in the extraction of the formaldehyd content from the freshly prepared specimen, but also in the restoration of color to old Kaiserling specimens, that the solution in question became an important part of the new system. Old tuberculous viscera which had lost so much of their color as to render the tubercles in the intestinal walls practically invisible were restored to their natural colors by an immersion, for a period of six days, in the saturated salt solution. An old and discolored lung (pleurisy), a kidney 11 years old, together with a miscellaneous collection of old Kaiserling specimens, were similarly treated with striking results.

While the use of the sodium chlorid solution proved of distinct advantage in the process of clearing the specimens and developing the gross colors, a study of the results revealed the possibility of a further evolution of color production by restoring the finer tints which had been lost in the gradual process of deterioration. Experimental procedures proved that a solution of potassium acetate and nitrate would produce, in conjunction with the saturated salt solution, the desired end-restoration of the finer tints. With new as well as with old specimens, the tests proved that in the prep-

aration of museum specimens, the use of alcohol could be avoided. After a number of experiments, it was conclusively demonstrated that the formaldehyd extraction and subsequent color development were far more satisfactory when the procedures in question were effected by means of the saturated salt and nitro-acetate solutions than by the more expensive method of using one or more alcohols.

The system employed in the preparation of specimens for the Pathological Museum of the George Washington University Department of Medicine involves the use of the following solutions:

SOLUTION 1

Liquor formaldehydi	200 c.c.
Potassium nitrate	15 gm.
Potassium acetate	30 gm.
Water	1,000 c.c.

SOLUTION 2

Saturated solution of sodium chloride	q.s

SOLUTION 3

Potassium acetate	60 gm.
Potassium nitrate	30 gm.
Water	1,000 c.c.

SOLUTION 4

Potassium acetate	100 gm.
Glycerin, C. P.	250 c.c.
Liquor formaldehydi	5 to 10 c.c.
Water	1,000 c.c.

Depending on its size, the carefully washed fresh specimen is allowed to remain in Solution 1 for a period of from one to five days. With allowance for the extent of the pathologic changes as well as for the size of the specimen, formaldehyd extraction and gross color development are usually completed by Solution 2 in from one to three days. In Solution 3 (nitro-acetate solution) the time required for the complete development of the colors in the fresh specimen is from two to seven days, old specimens requiring, of course, a longer period of immersion. The specimen is then placed in the glycerin preservative fluid to which liquor formaldehydi is added to prevent the growth of molds. In the preparation of solid viscera (kidney, liver, spleen, etc.,), the color development of the deeper parts is of paramount importance. The best results will be obtained by placing the specimen directly in Solution 1 for a period of several days, at the end of which time it should be sectioned as desired and immersed (one or two days) in Solution 2. An immersion in Solution 3 for a period of from two to five days will complete the color evolution of the exposed surface of the sectioned specimen with a remarkable degree of perfection. In the preparation of old specimens, the Kaiserling-preserved viscus admits of a remarkable degree of color restoration by the use of Solutions 2 and 3. Old specimens should be placed in Solution 2 for a period of from two to five days, then in Solution 3 for a similar period of time. During the year in which this method of preparing museum specimens has been tried, the results have proved eminently satisfactory. Daylight and direct sunlight have in no way affected the variety and brilliancy of the colors. Shrinkage of the specimens has not been observed and a crucial test — drying a specimen in the air for several days and recoloring with Solutions 2 and 3 — has given excellent results in the recovery, not only of the form of the original, but also of the color differentiation obtained at the time of preservation.

Getting Results.—Authors who put off their thinking until they come to write are like a sportsman who goes forth at random and is not likely to bring very much home.—Schopenhauer.

HEMOTHORAX CAUSED BY RUPTURE OF A DISSECTING ANEURYSM. RECOVERY

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History.—The patient, D. F. D., a man aged 40, married, was admitted to the medical ward of the Presbyterian Hospital at 1:30 a. m., July 15, 1913. He had had the usual diseases of childhood, including diphtheria. Since childhood he had been healthy. Fifteen years ago, at the age of 25, he had an attack of rheumatic fever, which confined him to the house for a week but did not damage his heart. Except for occasional annoyance from hemorrhoids, the man has not been sick since 1898. He uses tea and coffee very moderately, but drinks a moderate amount of beer every day and confesses to occasions of inebriety. He denies venereal disease. The family history is negative.

For twenty-three years the patient was a bricklayer and has had much climbing to do, especially when employed on tall buildings. It has not been at all unusual for him to climb twelve stories a day, carrying a 25-pound kit of tools. For a year he has been a traveling salesman, and has indulged freely in alcohol, though not to excess.

Present Illness.—The patient states that for about six months he has been getting short of breath, especially when going up stairs and has had pain in the heart and across the upper portion of the chest, which became severe four days before the attack to be described, and on the day of the attack was worse than at any previous time. These pains come on independently of exertion or emotion and apparently have no relation to digestion. They are not very severe and are not associated with fear of death (angina?) The patient's appetite is good; his bowels are regular. No cough or hoarseness existed until two days before admission when a cough developed, accompanied by some expectoration but no hemoptysis. No swelling of the ankles has been present.

July 14 he started on a business trip and was carrying two heavy valises. When he reached the train-shed, the patient became anxious about the time and ran to his sleeping-car. While running, he suddenly became short of breath and broke out into a profuse perspiration. He felt very weak and almost fainted, but by great effort got to the coach and into a seat, panting for breath. The dyspnea was very great. He was conscious during this attack, was nauseated, vomited and had diarrhea, but suffered no pain. The patient insists that his only discomfort was the dyspnea. His wife states that he became very pale. He was admitted to the Presbyterian Hospital approximately two and a half hours from the time the attack began. While waiting for the ambulance to arrive, the patient was forced to sit upright. The dyspnea did not increase and he had no pain. When admitted, there was but little dulness over his left chest.

The patient, after admission, had a fairly comfortable night. He could not lie flat, however, and spent the remainder of the night sitting up in bed. The resident physician noticed a few hours after admission that there was restriction of expansion on the left side of the chest, especially anteriorly. The percussion note was flat over this area, and the heart could not be outlined with any degree of accuracy. The breath-sounds and vocal resonance were diminished on the left side anteriorly and posteriorly. The heart-sounds were not well heard. The pulses were equal, full and regular, and the vessels did not seem to be sclerosed.

I saw the patient for the first time about ten hours after admission. He was then propped up in bed, was breathing with more difficulty, and pallor was marked. He complained at this time of discomfort in the left chest, which he described as a dull, heavy pain or sense of oppression. There was no sharp, stabbing pain. The heart was displaced, its right border being 4 cm. to the right of the sternum. The apex-beat was not palpable, and the left border could not be determined, owing to the flatness in the left chest into which the cardiac

dulness merged. There was impaired resonance over the apex of the left lung, and flatness over the base with all the usual signs of a large pleural effusion. The aorta was found to be slightly dilated, but no definite sign of aneurysm was present. The pulse was irregular. The blood-pressure was 145 mm. Hg systolic, and 65 mm. Hg diastolic. A Wassermann test was negative.

BLOOD-COUNT

Hemoglobin	60 per cent.
Erythrocytes	3,120,000
Leukocytes	13,250

DIFFERENTIAL

Polynuclear	60 per cent.
Lymphocytes	33 per cent.
Large mononuclear	6 per cent.
Transitional	1 per cent.

The urine had a specific gravity of 1.021, but apart from a cloud of albumin was otherwise apparently negative. The temperature was 97.8, pulse 108, and respiration 44.

Owing to the symptoms of pressure, the left chest was aspirated about 12 noon, July 15, 1913, nearly fourteen hours from the onset of the first symptoms, and 650 c.c. of a bloody fluid were withdrawn. Following this the patient breathed more easily and the pulse became stronger and less irregular. The fluid from the pleura contained approximately the same number of erythrocytes per cubic millimeter as the blood, namely, 3,000,000.

July 18, the patient was in a condition which warranted his removal to the Roentgen-ray laboratory. The picture taken at this time corroborated the diagnosis of a dilated aorta and hemothorax. During his stay in the hospital the patient had a febrile temperature but complained of nothing after the thoracentesis, and was discharged July 27, 1913, very much improved.

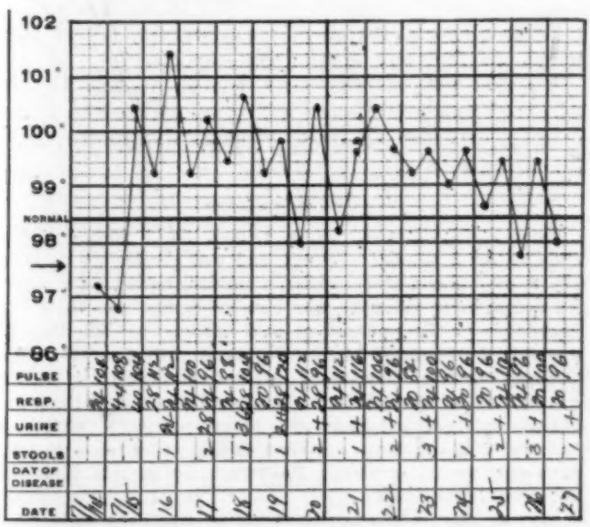

Chart of temperature, pulse and respiration of Patient D. F. D.

Shortly after his discharge from the hospital the patient presented himself at the university hospital for a fluoroscopic examination, which was made by Dr. Graves. A large diffuse aneurysm of the aorta could be plainly seen. The left chest showed a dense shadow due to the hemothorax.

In the fall the patient wrote that he was engaged in active business in the middle West and that his health had been good except that he had occasional pains about the heart and in the scapular region, which became worse on lying down.

Nov. 26, 1913, the patient appeared at my office. Except a lessening of the extent of flatness in the left chest, the physical signs were about the same as in July. Roentgen-ray and fluoroscopic examinations were made Nov. 28, 1913, and revealed a less extensive shadow in the left chest while the aorta was dilated as on the first examination.

There can be no doubt but that in this patient we have to do with a hemothorax whose origin must be ascribed to the rupture of a preexisting aneurysm. It is far from likely that, as a result of the effort of running for the train, there could be a sudden rupture of a normal aorta, with the resulting bloody effusion, and it seems more probable that an aneurysm had been existent for some time. Indeed, it was beginning to make its presence felt by pressure symptoms—cardiac oppression, chest pains. Just how long the aneurysm had been present it is impossible to say, but these symptoms had been existing with exacerbations for six months before the rupture. Of the important etiologic factors in the production of arterial disease, only syphilis is lacking in this man. The patient admits abuse of alcohol and has been accustomed to extreme hard work, but denies syphilis, and there is no reason to doubt his statements.

The question whether a normal aorta or an aorta only moderately diseased can be ruptured by muscular exertion has been often discussed, although there can be little doubt that an aorta which is the seat of an extensive degeneration can be ruptured as the result of an unusual effort. Busse[1] believes that sudden extreme muscular exertion can rupture a perfectly healthy aorta, and holds that if the aorta wall is the seat of the disease, a very slight effort may have the same consequences. He offers an instance of rupture of a supposedly normal aorta in the case of a coachman aged 38, who, while trying to fasten two terrified horses experienced a sharp pain in the breast. The pain was of such intensity that he was forced to release the animals. The precardial distress and the headache which followed gradually wore away and the man returned to work the next morning. He was ordered to drive the same horses again. The beasts became terrified at an electric car and attempted to run away. By a tremendous effort the driver succeeded in holding them in check, but again experienced a pain in his chest, followed by vomiting and collapse. He was put to bed, but the next day, forty-eight hours after the first attack of pain, he died.

The necropsy revealed an aneurysma dissecans, which Busse believes was the direct result of the violent exertion. A noteworthy feature was that there was no sign of degeneration or softening throughout the whole extent of the aorta. Busse conjectures that forty-eight hours before death the break in the arterial coat had begun and that a dissecting aneurysm then resulted. The second exertion, about twenty-four hours before death, is held responsible for the final rupture. This author presents, as exemplifying his second theory, namely, slight effort serving to rupture a diseased vessel, the record of an old woman, who died following effort at defecation. In Busse's paper other cases are reported of spontaneous rupture following effort.

Schede[2] has subjected cases like those reported by Busse to a thorough and thoughtful criticism, and offers strong argument that in none can a degeneration of the aorta be excluded. To conclude, from a study of an isolated portion of a vessel, that it is healthy is not safe, and unless the whole vessel is carefully studied inferences as to normality are unwarranted.

Woloschin, despite Schede's argument, records the case of rupture of a perfectly healthy aorta [*sic*] following unusual effort. The rupture took place into

1. Busse: Virchow's Arch. f. path. Anat., 1906, clxxxiii, 440.
2. Schede: Virchow's Arch. f. path. Anat., 1908, excii, 52.

the left pleural cavity (3.500 c.c.) from a break in the aorta about 1 cm. in size.

It is more than probable that in all cases there has been some degeneration of the aorta, which may be very difficult to determine. Indeed, Tschechowski has shown that such a degeneration may follow acute and chronic infections without any inflammatory changes in the aorta.

According to statistics, aneurysms rupture very infrequently, only thirty-two instances of rupture (0.69 per cent.) occurring in 4,593 cases of aneurysm.[3] Of the thirty-two cases, thirty, or 93.75 per cent., were in men, and two, or 6.25 per cent., were in women. The average age was 40.4 years. As to the structure most frequently receiving the contents of the aorta, the accompanying table may be consulted.

STRUCTURES INTO WHICH ANEURYSMS MOST COMMONLY RUPTURE

Parts	No. of Cases	Percentage
Pericardium	13	40.62
Pleura (left)	7*	21.87
Esophagus	3	9.37
Externally	3	9.37
Trachea	2	6.25
Pleura (right)	1	3.12
Lung (left)	1	3.12
Bronchus (right)	1	3.12
Superior vena cava	1	3.12

* One of these cases was a case of dissecting aneurysm.

Although spontaneous cures of ruptured dissecting aneurysms have been reported, I have been able to find no case in literature where such a massive hemothorax has occurred without a fatal outcome. In all cases of hemothorax following rupture of the aorta, death has resulted in a few hours. The case herewith reported, therefore, has an unusual interest, and is believed to be worthy of publication.

248 South Twenty-first Street.

THE DISAPPEARANCE OF SUGAR IN DIABETICS AFTER CERTAIN PELVIC OPERATIONS *

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There is no doubt that we have deviated from our older and more orthodox views in regard to surgical intervention in cases of urgency in the presence of diabetes. Particularly in prostatic disease it has been shown that operation is well borne and that diabetes, if not too far advanced is no contra-indication.

That prostatectomy or hysterectomy in diabetes of long duration is occasionally followed by a subsidence or total disappearance of the sugar output is a new theme for which there is no plausible explanation at hand.

COLLECTED REPORTS OF CASES

CASE 1.—In the discussion of Joslin's paper,[1] Miller mentioned the following case: A woman passed 50 gm. of sugar in spite of being on a rigid diet. She had very severe uterine hemorrhages, and as a result was markedly anemic. A hysterectomy was performed. It was found that a carcinoma had developed on an old fibroid tumor. Several months later the patient returned, and it was found that she was entirely free from sugar. She is still well in spite of taking an unlimited diet.

CASE 2.—In closing the discussion Joslin reported a similar case: The patient had a severe attack of diabetes; the glycosuria occurred in connection with a fibroid tumor of the uterus. When the fibroid was removed the sugar disappeared.

The following two cases are reported by Manges, to whom credit is due for bringing conspicuously into the limelight of clinical medicine this fact, which probably has been in the minds of other observers, but remained unexpressed. Manges' two cases occurred in prostatics.

CASE 3.—The first case occurred ten years ago. The patient was a man aged 62, with long-standing diabetes. He had prostatic bladder symptoms of several years' duration. On account of his severe diabetes, the daily amount of sugar ranging from 50 to 150 gm., and a marked acidosis being present, he was considered a bad surgical risk, the more so as he had a very vulnerable skin. Finally the condition of urinary sepsis became so urgent that drainage of the bladder and prostatectomy were performed. The operation was well borne, and a marked improvement in the diabetes was noticed. The sugar excretion remained below 20 gm., and the acidosis disappeared. About one and a half years later the diabetes again took on a severe form and the patient succumbed to that disease.

CASE 4.—The second case occurred in a man aged 70. He had a long-standing diabetes and prostatic disease. The sugar ranged between 3 and 5 per cent. in spite of diet, and there was marked acidosis. A bad urinary sepsis supervened and operation was performed. Calculi were removed from the bladder and the prostate gland was enucleated. Subsequently the sugar disappeared completely and remained away in spite of a liberal diet.

After a careful search of the literature, I have been unable to find any similar case-reports.

To this list of four cases I wish to add two of advanced prostatic disease with pronounced and severe diabetes in which all traces of sugar disappeared from the urine soon after operation.

AUTHOR'S CASES

CASE 1.—M. G., aged 54, a robust, florid man, had had diabetes for a number of years, and was passing at the time I first saw him a urine giving a marked reaction for sugar. No quantitative estimate was obtainable nor was there any knowledge of the presence of acid bodies. At this time he complained of marked bladder tenesmus with frequent urination and burning. Cystoscopy revealed the presence of numerous calculi in the bladder. The prostate at this time was slightly enlarged, but there were no symptoms of obstruction. In view of the diabetes a stone-crushing operation was done, with only partial success. Prostatectomy at this time was not even thought of.

May 4, 1910, a suprapubic operation was done under local anesthesia, and eight calculi were removed. The patient made an uneventful recovery and continued to pass urine giving a marked sugar reaction.

The patient was not seen again until December, 1912, when he complained of pronounced obstructive symptoms, and on several occasions had to be catheterized for retention. At this time he was passing from 2.5 to 3 per cent. of sugar, and the prostate was very large. The dangers of an operation in a diabetic were explained to him, but he said that he would rather die than live on in his present condition.

Dec. 9, 1912, prostatectomy was performed under nitrous oxid anesthesia. The patient left the hospital cured after sixteen days.

Two weeks later, in my office, the urine was turbid and to my astonishment did not react to the Fehling test. I felt that I could not explain this fact otherwise than that the products of exudation present in the urine at this time inhib-

3. Kelynach: Lancet, London, 1897, xl, 193.

* Read before the Metropolitan Medical Society, Jan. 27, 1914.

1. Joslin, Elliott P.: My Experience with Diabetic Patients Living Ten or More Years. THE JOURNAL A. M. A., Sept. 21, 1912, p. 933.

ited the reaction. As months went on the urine cleared and at no subsequent time did sugar reappear.

Unfortunately this patient, who was restored to complete health, was hit by a Brooklyn trolley-car in July, 1913, sustained a fracture of the base of the skull and died.

CASE 2.—Mr. J. G., aged 45, a man of slight build and much exsanguinated, was on his way from Chicago to Carlsbad for treatment for diabetes. The quantity of sugar the patient had been passing was unknown, and could not be estimated for reasons hereafter to be seen. April 12, 1912, I saw this patient for the first time. He had arrived in New York a day or two previously. On the train soon after leaving Chicago he began passing bloody urine. This continued and became aggravated until I saw him. He was then very much exsanguinated and nervous, with a constant desire to pass water, and had a bloody discharge from the meatus. Percussion of the bladder showed it to be much distended, and large quantities of clotted blood were aspirated through a catheter. A permanent catheter was fixed in the bladder. The patient was much relieved, but bleeding continued. Various internal hemostatics were employed without effect. The patient refused operation. Rectally the prostate was found to be of enormous size, particularly for a man of only 45. After several days without relief from lesser measures, he was prevailed on to submit to cystotomy.

April 18, 1912, the bladder was opened and the bleeding was seen to come from a large adenomatous prostate. The prostate was then enucleated. Recovery was slow and after six weeks the patient continued his journey to Carlsbad. I had made no examination of the urine for sugar after the operation. The patient returned to America in the fall of 1912 and come to report to me that he was entirely well and that he had lost all his sugar in Carlsbad.

In view of the cases reported by Miller, Joslin and Manges, I am disposed to contest the benefits of the Carlsbad cure in this case.

In our present knowledge of diabetes it is futile to attempt an explanation for the disappearance of sugar from the urine after operation. At best we can only continue to observe and to extend our knowledge of such instances, accepting the facts as pure empiricism. To dismiss the matter as a coincidence is absurd.

Spontaneous cure in diabetes is known, according to Naunyn, although very rarely, and then only after traumatic or syphilitic diabetes of short duration.

The instances cited are all cases of advanced and pronounced diabetes. Whether hyperglycemia was present in any of the cases, or whether it persisted after the disappearance of the sugar in the urine, is unknown.

Von Noorden refers to the marked improvement or cure of diabetes in cases which develop chronic granular nephritis, and are marked by hypertension and cardiac hypertrophy. So far as is known, neither Manges' cases nor mine were accompanied by granular nephritis.

In one of Manges' cases the disappearance of the sugar was incomplete; in all the others it was complete. In my first case it is noteworthy that the operation of cystotomy had no effect on the sugar output, although all symptoms of irritation were removed thereby.

The wide anatomic distribution of the organs that are known to cause glycosuria in their pathologic conditions, that is, the medulla, the pituitary body, the pancreas, the liver, and the adrenals, might suggest that also in the pelvis there exist organs which, by their internal secretion in pathologic states, disturb the glycogenetic function.

The temptation is great to venture further in the field of speculation, but in our present knowledge of glycosuria it is wiser to study more carefully the nature of these diseases when associated and to reserve our conclusions for some future time.

One important and fortunate inference can be drawn, however, and that is that diabetes must no longer be viewed as an absolute surgical barrier, at least for hysterectomy and prostatectomy, and that at least in some cases a cure of the diabetes may be looked for.

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THE RESPONSIBILITY FOR THE FAILURE TO DIAGNOSE TUBERCULOSIS IN ITS EARLY STAGES*

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Having had under observation recently a large number of patients undergoing sanatorium treatment for pulmonary tuberculosis, I was impressed with the frequency with which the diagnosis of tuberculosis was made only long after the patient had first presented himself to a physician with symptoms suggestive of the disease. On further inquiry I found that in but twelve cases out of a total of sixty-six was the diagnosis of pulmonary tuberculosis made immediately, or within a few weeks after the patient first sought a physician. These figures would not necessarily indicate any lack of diagnostic skill or thoroughness on the part of the physicians concerned, for, as is well known, the early diagnosis of pulmonary tuberculosis is frequently a matter of the greatest difficulty. I decided to determine, however, as far as possible, what means had been employed by the physicians to establish the diagnosis in the fifty-four instances in which the diagnosis had been made only after from three months to as long as five years after the patient had first sought a physician presenting symptoms suggestive of, and undoubtedly referable to a tuberculous pulmonary infection.

Of the measures to be employed in establishing the existence of pulmonary tuberculosis, the three most important — and, in fact, the indispensable ones — are the physical examination of the chest, the determination of the existence or non-existence of fever, and the examination of the sputum for the presence of tubercle bacilli. To this list might be added a careful history, and some might be inclined to add also the performance of one or more of the various diagnostic tuberculin tests.

To my mind, these tests are too variable, and as yet their significance too difficult of interpretation, except by the most experienced, to warrant their general employment as diagnostic measures. I have consequently directed my efforts toward determining how frequently in the cases cited these three measures, the determination of temperature, the physical examination of the chest and the examination of the sputum were employed in attempting to establish the diagnosis. A number of the fifty-four patients whose histories were studied visited more than one physician; several of them, in fact, convinced that they were subjects of an early tuberculous infection, in spite of the attempt of physicians to reassure them, visited almost every practitioner in the community in which they lived. I have thus collected the records of the examinations performed as a result of the visits of these fifty-four patients to

* Dr. Lavenson died July 4, 1913, at Los Angeles, from tuberculosis. The article gains interest from the fact that he wrote from the point of view of the physician and his responsibility as well as that of the patient.

seventy-two different physicians. Summarized, they are as follows:

In 13.8 per cent. of the cases neither physical examination nor sputum examination was made, nor was the temperature taken.

In 52.7 per cent. of the cases a physical examination alone was made.

In 12.8 per cent. the temperature was taken and a physical examination made, but the sputum was not examined. (In one of the cases included in this group the patient had no sputum at the time the other examinations were made.)

In 8.3 per cent. the temperature alone was taken.

In 4.1 per cent. a physical examination was made and the sputum was examined, but the temperature was not taken.

In 5.5 per cent. of the cases the patient, referring the complaint to the larynx, sought a laryngologist, and in these cases only a laryngeal examination was made.

One patient had the sputum examined, but neither was physical examination made nor was the temperature taken.

In but one instance in which the diagnosis was not made were physical and sputum examinations made and the temperature determined.

It may seem entirely unnecessary to remark on statistics so obvious as these, yet I feel that it is necessary in the interest of a matter of the greatest importance in the attitude of the physicians of this country toward the public health. The fact that when subjects with symptoms of pulmonary tuberculosis presented themselves for medical care, but one physician out of seventy-two performed the three absolutely essential tests before denying the existence of tuberculosis, denotes a deplorable lack of thoroughness in the professional attitude of physicians toward patients presenting themselves with the early symptoms of tuberculosis. Moreover, in 13.8 per cent. of the cases, not one of these measures was performed, even though in almost all of the patients the symptoms were sufficient to justify more than a suspicion of the existence of pulmonary tuberculosis, and in all were such as to justify an examination for its possible existence.

In the remaining cases the examinations performed denote that the attending physicians appreciated the fact that the symptoms pointed toward the possible existence of pulmonary tuberculosis, and measures directed toward its detection were instituted. Yet they were, as the results show, in the majority of cases, so deficient as to be almost useless. In 52.7 per cent. of the cases a physical examination alone was made. In considering the significance of these statistics, it must be noted that the patients from whose records they are derived belong in great part to those who visit general practitioners. There is no doubt that, in a fairly large percentage of the early cases of pulmonary tuberculosis, the diagnosis can be made from the physical examination by a competent clinician or a specialist in tuberculosis. I do not believe, however, that the same is true concerning the average general practitioner. A recognition of the slight changes in physical signs which characterize the earliest stages of pulmonary tuberculosis requires a degree of proficiency in physical diagnosis that the general practitioner does not command. It may be that in the peculiar position to which he is subjected by the economic conditions surrounding him, the general practitioner cannot be held entirely to blame for his lack of diagnostic skill. Be that as it may, one thing is certain—either he must become more proficient in physical diagnosis, or he must call to his aid those whose larger experience in this work has endowed them with greater skill. Moreover, in some of the instances in which the physical examination was made, it is the examiner's thoroughness rather than his ability that must be impeached; for in six cases the examination was performed through all or a portion of the clothing, a procedure which makes a negative result absolutely worthless; in three other instances the physical examination consisted of percussion alone, and in four instances auscultation was performed by direct application of the ear to the chest, a method that, except in rare instances, scarcely insures sufficient recognition or localization of signs to justify much dependence on the findings resulting therefrom.

Finally, it must be taken into consideration that in a certain number of cases of incipient tuberculosis, even the most expert physical diagnostician cannot discover physical signs sufficiently distinctive to justify a diagnosis. In the majority of such instances, however, further investigation along the lines suggested in connection with a careful consideration of symptoms and history will reveal the true nature of the condition. Suffice it to say that under no conditions is a physician justified in denying the existence of an incipient tuberculosis on the basis of a physical examination alone.

A somewhat greater degree of diagnostic thoroughness is indicated by those instances in which, in addition to a physical examination, either the temperature was taken or the sputum was examined. I have included as instances in which the temperature was taken all of those cases in which it was taken even though but once, and unfortunately the greater number of cases come within this group; in most of the cases the temperature was taken only on the patient's visit to the physician, regardless of the time of day. It is generally recognized that a temperature record of less than two or three times a day for a period of at least a week cannot be considered as of much diagnostic importance in early pulmonary tuberculosis.

The sputum examination, if positive, at once establishes the diagnosis, but unfortunately a negative result does not possess the same significance in proving the non-existence of a pulmonary tuberculosis, and by a proper consideration of the other diagnostic features a fairly large percentage of cases of early pulmonary tuberculosis can undoubtedly be diagnosed before bacilli appear in the sputum.

The fact that in 5.5 per cent. of the cases the patients were subjected to a laryngoscopic examination only emphasizes the fact that unless a patient's laryngeal symptoms are fully accounted for by the existence of a local non-tuberculous condition, he should be subjected to a complete general examination for the existence of a pulmonary infection.

I do not attempt to maintain that were the proper diagnostic measures employed in these fifty-four patients the diagnosis would have been established at once in all of them, but it is fair to assume—and this assumption is justified by the subsequent histories in many of the cases — that in a large percentage of them the diagnosis could have been made. We have gone to much trouble to acquaint the masses of the people with the early signs of tuberculosis, but does our obligation cease there? When patients present themselves to us with symptoms of early tuberculosis, is every possible measure employed to determine if the disease actually exists? Judging from the

few statistics that I have collected, it is not, and if these statistics are representative of conditions existing throughout the country, there must be a radical change in the attitude of the general practitioner toward the early diagnosis of pulmonary tuberculosis before we can begin to think of successfully combating the disease.

I believe that the first step in this change must be a general adoption of the plan to subject every patient presenting himself with symptoms even remotely suggestive of tuberculosis to a thorough physical examination; to have his temperature taken morning, afternoon and evening for at least a week; and to have the sputum examined several times, unless bacilli should be found in one of the earlier examinations. If the latter examination should be negative and the physical examination and temperature record should present findings of a doubtful nature, either the assistance of a physician of greater diagnostic skill or experience should be obtained or the patient kept under more or less constant observation until the physician is thoroughly satisfied that no active tuberculosis exists. This may result in the production of a certain amount of what might be termed "objective phthisiophobia" on the part of physicians, and possibly more or less "subjective phthisiophobia" among laymen, but I believe that this would not be an undesirable and certainly not a serious state of affairs.

I am convinced that only when physicians in general assume this attitude of suspicion toward every patient presenting himself with symptoms in any way suggestive of tuberculosis will a much larger percentage of incipient tuberculosis be recognized than is at present. It is much pleasanter to perform some superficial examination to ease the professional conscience, and then happily inform the patient that his fears are unfounded and that nothing can be determined to warrant a diagnosis of tuberculosis, but the physician who performs the more unwelcome task of advising his patients that, though nothing definite can be found, further observation or a visit to a more experienced physician is necessary, performs his duty better by his patients and by humanity.

As to another phase of the early diagnosis of pulmonary tuberculosis that I noted in my observations, it is somewhat more difficult to comment. It may be unjust to draw conclusions from eight or nine instances, but in collecting the preceding data I met at least that number, indicating a deplorable lack of what might be called text-book knowledge of the significance of the signs and symptoms of tuberculosis. In several cases frank pulmonary hemorrhages were regarded as of no significance whatever, and the patients were assured that they absolutely did not have tuberculosis. It cannot be said too emphatically that, except in the rarest instances, the expectoration of blood is a definite and unmistakable sign of the existence of pulmonary tuberculosis. The assurance of a physician that the expectoration of several mouthfuls of blood must have come from the nose is very consoling, but it is very seldom based on fact. In several cases the consolidation of almost an entire lung associated with an afternoon temperature of 99.4 to 100 for a period of more than five months was diagnosed as pneumonia. In several instances the significance of a continued afternoon temperature of 99.4 or slightly higher was entirely ignored. In the one instance in which both physical and sputum examinations were made and the temperature was taken, a daily afternoon temperature of 99.2 to 99.4 was observed over a period of many weeks, and in spite of this, neurasthenia was diagnosed. Another common fallacy appears to be for physicians to ignore the existence of closed cases, and flatly to deny the existence of pulmonary tuberculosis when the sputum examination is negative, despite the very positive nature of other signs and symptoms.

In this connection, a rather humorous incident was related to me by one patient illustrating how the significance of so-called diagnostic tests can be misinterpreted. The patient presented himself to a physician, fearing that he had contracted tuberculosis. After some preliminary examinations had been performed, the patient asked that his sputum be examined, but was informed by the physician that the sputum examination was an "old-fashioned" method of recognizing pulmonary tuberculosis, and that the new method consisted in the performance of the ophthalmo-tuberculin test. Incidentally, the result of the performance of the test was negative and the patient was told that he did not have tuberculosis; a short time later he was found to have advanced pulmonary tuberculosis.

It is possible that in some of the cases I have collected the physician has recognized the existence of tuberculosis, and out of a mistaken sense of kindness to the patient or a desire to avoid the painful task of acquainting him with his condition has not informed him of his findings. I believe that nothing can justify such a course. Not only is the patient unable properly to strive as he should to improve his health, but if his sputum contains bacilli, unless he be fully acquainted with the dangers to which he subjects others by promiscuous expectoration, he also becomes a constant source of danger to his associates.

I feel that I must emphasize that this is not intended as an attack on the general practitioner. It is but a plea that the general practitioner, who is, and will continue to be the most important factor in the fight against tuberculosis, shall recognize and perform his duty toward his patients and humanity, and a plea for the sufferer with tuberculosis. His only hope lies in the early recognition of his condition, and I feel confident that the proper course shown him there is no physician worthy of the name who would hesitate to perform any task within the bounds of his professional activities to give the tuberculosis patient that which is to him at least greater than the preservation of health, the restoration to health and the activities of life.

THE PROTECTION OF GRANULATIONS

A NEW DRESSING MATERIAL

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It is my desire to call attention to the advantages of certain modifications in the management of large granulating areas resulting from extensive burns and mechanical injuries, and to offer some suggestions that will greatly simplify the task, mitigate the suffering and not violate the surgical principles involved.

The surface of a granulating wound is usually covered with an albuminous material which exudes from its vascular elements and consists of serum, fibrin, red cells and leukocytes. Closely adherent to the surface cells is a thin layer of fibrin enmeshed in which is an enormous number of white cells. This exudate is not offensive and purulent, but in function defensive and protective to the underlying embryonic tissue.

When collected in quantities under favorable conditions this exudate, being an excellent medium, is easily infected. The result of infection is usually disastrous to the reparative phenomena, since a purulent process necrotizes the advancing embryonal cells and seriously retards healing.

A wound of the type under discussion, whether infected or non-infected, is usually dressed with dry gauze, a moist occlusive, or a moist evaporating or ointment dressing. I am inclined to believe that generally there is too much confidence placed in the antiseptic qualities of the chemical used and not enough consideration given to the character of the dressing applied.

Careful clinical observation of occlusive dressings applied to wounds of this nature will convince one that they are irrational and unsurgical. An occlusive dressing, whether it be an antiseptic ointment, moist antiseptic gauze covered with some impervious material or what not, does not drain the wound surface. If the wound is not infected the normal wound products are held in increasing quantity. The presence of heat and moisture converts this medium into septic material on the admission of pyogenic organisms, since no wound, however carefully guarded, remains strictly aseptic for more than twenty-four hours.

If the wound be infected, conditions are made decidedly worse by the application of this type of dressing, since the infection is induced to spread to surrounding tissues, which are macerated and thereby lowered in resistance. The antiseptic action of the chemical component is negligible when compared to the ill effects of the poultice-like dressing. It has been demonstrated many times that bacteria actually increase rapidly in the meshes of antiseptic gauze if evaporation be prevented. An antiseptic to be potent under these conditions would be of germicidal strength and would then kill the delicate tissue-cells as well as the flora in the wound.

A dry dressing such as plain or chemically treated gauze or antiseptic powder is safer both in theory and in practice than the occlusive dressing, but requires most careful attention and frequent change, since it has the disadvantage of permitting early inspissation of the wound discharges. The drying of the exudate in the powder or in the gauze forms a crust with the result that either dressing thereby becomes occlusive.

The moist evaporating dressing overcomes in large measure the disadvantages of the other forms. Capillary drainage of the excess of wound exudate or of seropurulent material is induced. Not only may antiseptics be used successfully in this type of dressing, but desirable chemical solutions may be safely and conveniently applied to stimulate flagging granulation growth.

There is a distinct need for improvement in our efforts to protect granulations during the change of dressings. With copious use of aqueous solutions or hydrogen peroxid and the most painstaking layer-by-layer removal of the gauze, there still remains a traumatized granulation bed. The mechanical difficulties to be overcome arise from two sources: First, the inspissation of the exudate in the layers of the gauze forms a glue-like mass that attaches the dressing to the wound margin and, in patches, to its surface. This air-dried crust-like mass as effectually resists the solvent action of solutions as would an ointment. Secondly, the rapidity of growth of the granulation-tissue permits its tiny buds to project through the meshes of the gauze, where they firmly attach themselves, with the result that on removal of the dressing the surface is left torn and bleeding. These conditions are most undesirable for the following reasons:

1. The raw and bloody surface more readily and firmly becomes adherent to the subsequent dressing.
2. The broken tissues offer new avenues for the spread of infection if present.
3. The epithelial margin of the wound is torn and often stripped off, thus seriously retarding its advance.
4. The removal of a dressing under such conditions is attended with great pain, and when repeated day after day often reduces the patient to a nervous wreck.
5. The fibrous tissue is greatly increased in certain areas by reason of the irritation of this repeated trauma. The surface being rough and irregular, the resultant scar is uneven and puckered instead of being smooth and elastic, which would be a condition much to be desired.

To obviate these serious objections to the usual dressing, I sought to develop a dressing material and technic that would insure a desired result without violating surgical principles. Obviously such a dressing must fulfil the following requirements:

1. It must not allow granulations to become attached in its substance.
2. It must permit drainage through it.
3. It must not conflict with any other form of dressing desired by the surgeon.
4. It must be capable of sterilization.
5. It must be adaptable to the conformation of the part.
6. It should be readily procurable.
7. It should be cheap.

The dressing as at present developed entirely conforms to these requirements. It consists of ordinary white mosquito-net which has been infiltrated with a mixture of paraffin and petrolatum, of each two parts, and stearin one part. This prepared net will permit the granulations to grow through its mesh, but not intimately into its threads, and removal is not attended by the usual accidents. Drainage through its interstices into the superimposed dressing is unobstructed and free.

Other elements of the dressing desired or habitually used by the surgeon do not conflict with its application. It was not designed to replace any one dressing, but to be used in conjunction with any other form. The materials may be sterilized before preparation or the preparation may precede the sterilization.

The technic of preparation and sterilization employed for my use is as follows: The mosquito-net is cut into pieces of suitable size for convenient handling. The paraffin, petrolatum and stearin in proper proportion are placed in a porcelain or metal bowl and heated to the boiling-point. In this heated liquid a double thickness of the net is immersed for three minutes. It is then removed, the excess of the mixture allowed to drain off and the surfaces separated to clear the meshes. The pieces are then folded and wrapped in oiled paper. Several of the packages are wrapped together in a towel or dressing-cap and sterilized in an autoclave.

The oiled paper prevents the absorption by the dressing-cap or towel of the mixture liquefied during sterilization. It is obvious that after immersion the steps of draining and separation must be accomplished rapidly, before the cooling is sufficient to congeal the mixture in the meshes so that they appear as tiny window-panes.

The dressing may be rendered antiseptic by the addition of phenol (carbolic acid) to the heated mixture to make it 0.5 per cent. strength.

When ready for application the net may be cut into such shapes or sizes as may be desired. It is nearly as flexible as the naked cloth and conforms readily to the surface of the part. The materials for its preparation are everywhere procurable, and all the component parts of the dressing are extremely cheap.

The technic of application and removal as used in our clinic is as follows: After the wound is cleansed a single or double layer of the prepared net is cut, of sufficient size and shape to cover the wound and allow ample margins to extend over the sound skin beyond the wound edge. The material is then fastened with adhesive strips or with tapes and the superimposed dressing of gauze applied and held in place with a roller bandage.

There is a distinct advantage in its use when it comes to the removal of the gauze, as there is no gluing of the dressing to the wound edge, and when hydrogen peroxid is applied here it readily finds its way beneath the entire dressing and the gauze may be lifted off *in toto*. The net is next carefully lifted from the surface.

The material is almost ideal for use in the primary dressing after skin grafting, as the grafts are held in place and do not adhere to the dressing so as to jeopardize them when the dressing is removed. It is my custom to cover the grafted wound with a double layer of the net and then lay on a few thicknesses of gauze moistened with normal salt water and hold in place with a gauze roller.

I am fully aware that the principle involved in the dressing is not new, as wire mesh has been used in like manner and there is on the market a rubber mesh for similar purposes. The former is for most obvious reasons clumsy and unmanageable and almost wholly undesirable, while the latter is not easily procurable and is prohibitive in price for the usual case that requires large quantities to be replaced daily.

This material has been in use for more than a year and has given me no cause to regret its addition to my armamentarium. When other dressings are made on patients accustomed to the use of this material, they ask that it be again made a part of their dressing. To such patients it gives more relief than any single step in their treatment.

667 North High Street.

DISTINCTION BETWEEN THE CORPUS LUTEUM OF OVULATION AND THE TRUE CORPUS LUTEUM OF PREGNANCY

PRELIMINARY REPORT *

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The present investigation was conducted to determine the differences, if any, in size and chemical composition of the corpus luteum of ovulation and the true corpus luteum of pregnancy. The active principle of this gland has not been separated or identified, and it is, therefore, difficult to standardize the drug for medicinal purposes. Clinical evidence alone will in time lead to more definite knowledge regarding the true therapeutic value of the two varieties of the corpus luteum, but until the desiccated gland can be standardized chemically or physiologically, real progress cannot be expected. Such methods have been worked out in the case of the thyroids, the pituitary body and the adrenals, and their therapeutic value has naturally increased accordingly.

The ovaries from 700 non-pregnant and 689 pregnant cows were collected twice a week during the late fall months, when cattle as a rule are in excellent health and all stages of pregnancy plentifully in evidence. The total number of corpora lutea obtained from non-pregnant animals were 316, while those from pregnant cows totaled 692. In the pregnant cows one of the ovaries invariably showed a well-developed corpus luteum, and in three instances a single ovary contained two separate corpora lutea of equal size. Less than half of the non-pregnant cows possessed corpora lutea. The color and shape of the two varieties are identical and it would be impossible, therefore, to make any classification by external appearance only. A thorough examination of the uterus of each individual female animal was made in order to determine whether or not it was pregnant. In this investigation the glands from pregnant cows represent uniformly the entire period of gestation. Non-pregnant cows include an equal number of virgin animals (heifers) and primiparae or multiparae.

In examining the uteri from approximately 1,500 pregnant cows, partly for this investigation and partly for other purposes, some observations were made which may be of interest in this connection. In three instances the uteri were found to be strongly contracted and exceptionally hard to the touch. The largest of these uteri was completely filled with a dark brownish-red substance of a consistency resembling that of asphalt. The surface of the mass was slimy and in the process of being digested, while the interior was of a somewhat lighter color and consisted largely of muscle and skeletal parts.

The next largest of the uteri contained the entire skeletal parts of a fetus 3 to 4 months old, all the softer organic substances having been absorbed.

The third and smallest uterus contained a viscous yellow emulsion with a few fragments of disintegrated bones, hoofs, etc., and evidently represented the final stage of digestion. There was no sign of inflammation or putrefaction present in any of these uteri, and it is very evident that certain conditions necessitated this course of eliminating the fetus instead of complete abortion. The corpora lutea from the ovaries of these three cows were well developed and of normal size and appearance.

These observations demonstrate clearly that when the fetus dies during gestation the uterus itself is capable of disposing of the fetus by other means than simple abortion.

One corpus luteum, weighing 2.6 gm., from a non-pregnant cow, contained a hard yellowish substance. Chemical analysis showed this material to contain besides nitrogenous material and some calcium carbonate, large quantities of organic and inorganic phosphates, especially calcium phosphate. Cluster-shaped masses of a similar chemical composition have on several occasions been observed by me in the pituitary body of cattle. In such instances, the space between the anterior and the posterior lobes was enlarged and contained a

* From the Research Laboratory in Organotherapeutics of Armour & Co.

yellowish, viscous fluid in which the clusters were suspended. These incidents are mentioned here as suggestive of the similarity in the apparent disturbing results produced by certain factors, both in the pituitary body and in the corpus luteum.

The usual procedure for collecting the raw material was followed. The ovary containing the corpus luteum was removed from the animal shortly after slaughtering and while still containing the animal heat. The corpora lutea were then carefully dissected out and trimmed free from all adherent tissue, weighed and stored at freezing temperature until the entire lot had been collected. The glands were finely minced, dried on agate-ware trays at a temperature not exceeding 65 C. (149 F.) to constant weight and extracted in the Soxhlet apparatus with petroleum benzin. The loss of moisture and petroleum-benzin-soluble material were noted, and the desiccated fat-free substance powdered in a tube-mill to pass a 60-mesh sieve.

The total number of glands, the maximum, minimum and average weights, together with the moisture and petroleum-benzin-soluble material on the fresh glands and yield of desiccated material are given in the accompanying tabulation. On the desiccated fat-free glands the moisture, ash, total nitrogen and total phosphoric acid were determined and the figures calculated to dry basis for comparative purposes.

COMPARISON OF THE CORPORA LUTEA OF PREGNANCY AND OF OVULATION

	Corpora Lutea from—	
	Pregnant Cows	Non-Pregnant Cows
Fresh Glands:		
Total number of corpora lutea	692	316
Average weight of corpora lutea, gm.	4.8	4.1
Maximum weight of corpora lutea, gm.	18.2	10.0
Minimum weight of corpora lutea, gm.	0.9	0.8
Moisture in fresh glands, per cent.	77.0	78.9
Petroleum-benzin-soluble, per cent.	4.5	4.5
Desiccated Fat-Free Glands:		
Yield of desiccated fat-free glands, per cent.	18.5	16.6
Moisture, per cent.	4.9	5.6
Ash, per cent.	5.33	6.0
Total nitrogen, per cent.	13.1	13.2
Protein (N×6.25), per cent.	81.88	82.5
Phosphoric acid (P_2O_5), per cent.	2.6	2.84
Ash, dry basis, per cent.	5.6	6.36
Nitrogen, dry basis, per cent.	13.77	13.88
Protein, dry basis, per cent.	86.06	86.75
Phosphoric acid, dry basis, per cent.	2.73	3.01

The tabulated results show that the corpus luteum of pregnancy is larger and shows a greater variation in size than the corpus luteum of ovulation.

When the figures on the dry basis are compared it will be noted that the nitrogen, and consequently the protein as well as the ash and total phosphoric acid contents, are slightly higher in glands from non-pregnant animals than in the true corpora lutea of pregnancy. It is, however, very doubtful if these slight differences are of any significance in judging or determining the therapeutic value of the two varieties of the corpus luteum. The active principle undoubtedly is present in the glands in organic combination and closely associated with the protein complex. Much more extensive work will be required, therefore, before this problem can be solved. It is the intention to continue investigation along these lines.

It may be mentioned here that tests for epinephrin were negative in both varieties, and that the glands did not give more than a very faint indication of the presence of iodin, as would naturally be present in ordinary animal tissues.

THE FREQUENCY OF PREGNANCY IN SLAUGHTER-HOUSE CATTLE IN RELATION TO THE SUPPLY OF CORPUS LUTEUM

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DETROIT

With the advent of corpus luteum to therapeutic importance, we are confronted with the question as to the superiority of extracts from corpus luteum from pregnant animals (corpus luteum verum) over extracts from non-pregnant animals (corpus luteum spurium). In his recent paper, Dannreuther[1] asserts that only corpora lutea vera bear the substances that are efficacious in gynecologic conditions, and he would explain some of the failures attending the use of this material on the grounds of the material not being obtained from pregnant animals.

There is no anatomic basis for the alleged difference in the two types; the structure is identical. As a rule, the corpus luteum of pregnancy attains a much larger size than the spurious type, but this does not serve to distinguish, for the corpus luteum in the non-pregnant has frequently been found to occupy four fifths of the entire ovary, and in pregnancy the corpus luteum is at times smaller than the average size for non-pregnancy. It has also been suggested that variations in color of corpora lutea stand in some fixed relation to pregnancy and non-pregnancy. The variations in color are merely differences in amounts of blood and lutein cells. Such variations in color usually stand in relation to the age of the corpus luteum. Just after ovulation the blood predominates and gives the dark red color to the corpus luteum; later the blood is absorbed and the yellow color is prominent from the predominance of the lutein cells. Whatever differences there may be, giving rise to greater efficacy from treatment with corpus luteum verum, they probably involve the chemical constituents rather than the structure of the two types of corpus luteum.

In connection with this confronting situation it seemed advisable to determine the frequency of pregnancy in cattle in the packing-houses, inasmuch as this is the source of supply of corpus luteum for pharmaceutical houses. The cattle slaughtered in the larger abattoirs are usually range cattle, the males and females being together at all times. The greater number of the cows of such herds are at some stage of pregnancy. An examination of the ovaries and uteri was made on forty cows appearing consecutively on the killing floors, but of two lots from different parts of the country. The cows so examined were all within the calf-bearing period, but of various ages. Of the forty cows, thirty-five yielded ovaries containing corpora lutea of such size as permitted dissecting out. Of these thirty-five, twenty-nine, or 83 per cent. (72 per cent. of the entire number), were pregnant. The corpora lutea from these pregnant cows were not uniformly large; many were identical in size and general appearance with those from the non-pregnant animals. Others were so large as to occupy five-sixths of the entire ovary.

From this examination it may be inferred that numerically 83 per cent. of corpus luteum is derived from pregnant cows. On account of the larger yield of corpus luteum from a pound unit of ovaries from pregnant animals than from the same unit of ovaries from non-

1. Dannreuther, Walter T.: Corpus Luteum Organotherapy in Clinical Practice, THE JOURNAL A. M. A., Jan. 31, 1914, p. 359.

pregnant animals, because of the larger average size of the former, the proportion by weight may run as high as 90 to 95 per cent. of corpus luteum verum.

These figures may vary on an examination of a larger number of cattle, and furthermore, a seasonal variation may alter the percentage of pregnancy. If the foregoing figures at all approximate the general condition, all corpus luteum preparations are derived in a high percentage from pregnant cattle.

960 Waterloo Avenue.

A SIMPLIFICATION OF THE GRAM STAIN

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Having been impressed with the importance of the Gram stain as a routine laboratory procedure in bacteriologic examinations, and with the fact that, as ordinarily performed, it is time-consuming (involving from five to ten minutes), and comparatively laborious, I evolved the following simple technic, with the idea of eliminating the time element as far as possible without impairing its reliability:

Six wide-mouthed, 4-ounce bottles are numbered from 1 to 6 and labeled according to the following ingredients: Bottle 1 contains alcohol-saturated gentian-violet with distilled water in the proportion of 1 part stain to 3 parts water. Bottle 2 contains plain distilled water, Bottle 3 Gram's solution, Bottle 4 absolute *methyl* alcohol, Bottle 5 plain distilled water and Bottle 6 dilute Ziehl-Neelsen carbolfuchsin (about 1:10), whose speedy and penetrating staining properties are well known. The elements of the stain differ from the original technic in two essential details, namely, the employment of plain water for the gentian solution in place of anilin-water (this may be used nevertheless), and most important, the substitution of absolute *methyl* alcohol for *ethyl* alcohol, as the destaining agent. The reason for this substitution is that the former acts far more quickly and efficaciously, thereby featuring a desirable time-saving phase.

In performing the Gram stain, the slide is dipped into Bottle 1 for from five to ten seconds with constant stirring, is transferred to Bottle 2 for a few seconds, excess water being shaken off, then to Bottle 3 for five seconds with constant agitation of slide, thence to Bottle 4, where it takes but a few seconds to destain, especially if stirred, then transferred to Bottle 5 to wash (if it is not yet destained, the slide is returned to Bottle 4 again), and lastly to Bottle 6 for a couple of seconds. It is washed off in tap-water. The staining and counterstaining, it will be seen, have been performed in about one minute.

It will be noticed that after staining with gentian-violet the slide is washed in water. According to good authorities, washing the slide with water, before destaining, is permissible in the employment of the Gram stain. My reason for using Bottle 2 is that by washing off excess stain the precipitation of the Gram solution is minimized. Finally, the only frequent change necessary is that of the wash-water, since the gentian stain itself, I have found, does not deteriorate rapidly.

32 North State Street.

Therapeutics

THE TUBERCULOSIS PROBLEM

(Continued from page 1169)

TREATMENT OF SYMPTOMS

Fever.—Nothing tends to diminish the temperature more than the rest, quiet and fresh-air treatment already outlined. The patient who has high fever should not be given too much food at any time of day, even if the disease is tuberculosis; and most of what he does receive should be given during an afebrile period if possible. If he is suffering from acute tuberculosis, the nutrition should be much the same as for any other serious fever.

Sponging with hot water will often give these patients comfort, and, if they have profuse sweats, it keeps the skin clean. The frequency of such sponging will, of course, depend on the height of temperature and its continuance. Antipyretics are rarely indicated.

Cough.—The treatment of the cough depends on whether it is dry or moist, and whether expectoration is easy or difficult. If the cough is dry and hacking, much of it may be prevented by the will-power of the patient. It should not be forgotten that many dry, irritating coughs are due to a lingual tonsil or throat irritation. Soothing, alkaline gargles, non-irritating inhalations of simple steam or steam medicated with some non-irritant drug, as a small amount of a pine oil, will give relief. Many coughs of this kind are relieved by swabbing the lingual tonsil with boroglycerid. These dry, irritating coughs should be relieved without giving medicine by the stomach.

If there is considerable bronchitis with insufficient expectoration, or the cough is frequent without expectoration, no cough mixture is any more soothing or behaves better in the stomach than the following:

		Gm.	or c.c.	
℞	Codeinae sulphatis		20	gr. iv
	Ammonii chloridi	5		ʒ iss
	Syrupi acidi citrici.....	25		f℥ i
	Aquae.....q. s. ad	100		f℥ iv

M. Sig.: A teaspoonful, in plenty of water, every two, three or four hours, as needed.

Heroin may be used in place of codein if desired, but we believe that codein is the best sedative preparation of the opium series to meet the indication. The action of all other expectorants is inferior to that of ammonium chlorid, and ammonium chlorid as prescribed above is not very disagreeable. The dose may be taken in Vichy or other sparkling water if desired. None of the multiple sweet, sickish, syrupy preparations offered by proprietary firms should be used in the bronchitis and catarrh of tuberculosis, or in any other kind of bronchitis. It is not necessary to cause nausea or vomiting because a patient has a cough. The success of some of these syrups or malt preparations in dry cough is due to the fact that they soothe the throat and lingual tonsil. Such irritation can be allayed without the patient swallowing a mixture. If the cough is loose, and if expectoration is profuse, the stimulating effect of ammonium chlorid and the sedative effect of codein are not needed, and terpin hydrate becomes the best drug to use, as an expectorant. To meet this indication of profuse bronchorrhea it will not ordinarily be necessary to combine it with either codein or heroin. It should never be given in solutions, as not enough of it to be of advantage will be dissolved in any solution. It may be given in tablet, powder or capsule, and the

usual dose is 30 cg. (5 grains), given with plenty of water four or five times in twenty-four hours.

If there are cavities in the lungs, the patient should occasionally, by lying over the edge of the bed, allow gravity to aid him in expectorating the fluid and pus. Elevation of the foot of the bed is often of advantage. Sometimes inhalants containing creosote, oil of pine and perhaps benzoin are valuable. When there are large cavities which continue to fill up and cause septic fever, with the debility and loss of appetite that goes with it, or when there is danger of serious hemorrhage, it may be wise to inject air or nitrogen into the pleural cavity and compress the diseased lung. Such treatment should be given only in hospitals or sanatoriums, and then by an expert, as very unpleasant symptoms may occur; the heart may be unpleasantly pressed on, with a serious outcome. On the other hand, the treatment is sometimes very satisfactory.

Pain.—Pain in the chest is most frequently due to localized pleurisies, but it may be a neuralgia, or referred pain caused by disturbances of the more deeply seated nerves. Nothing is of more advantage in easing such pain than temporary strapping of the part of the chest affected. This is especially true of pain in the lower part of the thorax. Sometimes a hot-water bag will ease the pain; rarely a sedative may be indicated, but generally it is not needed. Mild counter-irritation by a liniment or ointment is sometimes advisable over these regions of pain; blisters are rarely expedient, though the thermocautery may be used. Dry cupping may give relief.

Hemoptysis.—Blood-tinged sputum or very slight pulmonary hemorrhages as evidenced by small clots or streaks of blood require no special treatment. Expectoration of pure blood, or coughing up a little blood repeatedly, requires attention. Such a patient should rest, and should undergo no exertion. The diet should be light, and hot soups or hot drinks should not be taken for a day or two, until the hemorrhage ceases. For this kind of bleeding little other treatment is necessary. If the bleeding is more severe, the patient should immediately be placed in a semirecumbent position, with loosened clothing and should be assured that there is no danger, as there rarely is danger from hemorrhage during all the early stages of pulmonary tuberculosis. In the late stages, with cavities, a large blood-vessel may rupture and the hemorrhage be fatal. It is well to have the patient lie on the side which is bleeding. This tends to prevent the blood from flowing into the bronchi of the other lung.

Besides reassuring the patient, it is often well, if there is a troublesome, irritating cough, to administer an hypnotic of morphin in just sufficient dose to quiet the irritability of the bronchial tubes and larynx so that the cough will be only sufficient for expectoration. (It is unnecessary to give a large dose which later will cause prostration; hence from 1/10 to 1/8 of a grain will be sufficient.)

The more rest the bleeding part has, the quicker will the blood coagulate in the bleeding vessels, but as above stated, mere capillary oozing should not be taken seriously. With a real hemorrhage from the lungs, the rest must be absolute; the patient should not even speak, at least not above a whisper. For some hours he should receive no food or drink. It is exceedingly doubtful if an ice-bag over the region of the bleeding is at all efficacious. The long-used remedy of eating salt may reflexly, by irritation, increase the vasomotor tension and thus may occasionally stop a hemorrhage, but most of the remedies used and said to be satisfactory in hemorrhage from the lungs are drugs that increase the blood-pressure more or less, which is undesirable. As the blood-pressure is lowered the hemorrhage will generally cease, usually without medication, so that whatever has been given has been supposed to be the cause of such cessation. If the patient becomes faint, blood-pressure is lowered, coagulation in the open vessel or vessels takes place, and the unpleasant symptom is cured by Nature's methods; therefore we should aid the natural cure of the condition by giving the patient nitroglycerin to lower the blood-pressure. Amyl nitrite is very frequently advised, but its action is so sudden, and for a few minutes so intensely disagreeable, that it is hardly advisable to use this powerful drug. Nitroglycerin on the tongue or hypodermatically will act as efficiently and almost as rapidly without causing the faintness and throbbing head that amyl nitrite will cause. It is a mistake to give ergot, caffein, suprarenal preparations, or digitalis, as these tend to increase the heart activity and raise the blood-pressure.

If there is a tendency to repeated, more or less serious hemorrhages, the daily administration of calcium in some form, either as lime-water, calcium lactate, or calcium glycerophosphate, and the feeding of gelatin are indicated. Also, if there seems to be a general tendency to the oozing of blood and to hemorrhage, injections of aseptic horse-serum is advisable; one or two subcutaneous injections will generally be sufficient. Inhalations of steam impregnated with some astringent such as tannic acid may be of value, if there is oozing of blood from the larger bronchial tubes, but such inhalations are of no value in bleeding from deeper portions of the lungs, as the astringent could not reach the region of trouble.

The patient should generally remain in bed for a week after a real hemorrhage. If the heart is impaired and some dilatation exists, if the expectorated blood is venous, and there are other signs of passive congestion of the lungs and of cardiac weakness, digitalis may be the best treatment for the condition; but for ordinary hemorrhages in pulmonary tuberculosis it is better, as above stated, to administer nitroglycerin in sufficient amount distinctly to lower the blood-pressure temporarily.

It has been repeatedly noted that constipation increases the tendency to hemorrhage in pulmonary tuberculosis, and that the higher blood-pressure caused by constipation is readily lowered by the administration of even simple laxatives. Because of this, it has been recommended[1] that when pulmonary hemorrhages occur, the patient should receive a dose of magnesium sulphate as well as nitroglycerin. Such immediate treatment of hemorrhage from the lungs seems hardly advisable. It might cause vomiting, and the mere increased exertion caused by bowel movements at this time, might cause more bleeding. The fact remains, however, that in pulmonary tuberculosis the patient should not be allowed to become very constipated.

If the hemoptysis occurs late in the disease and is dangerous in amount, the patient may quickly succumb, whatever the treatment adopted. The most efficient treatment of this serious condition is to place elastic bandages high up on the legs, or even all the extremities, to shut off their blood from the general circulation. It

1. Burns, Newell Bly: The Treatment of Hemoptysis in Pulmonary Tuberculosis, THE JOURNAL A. M. A., Dec. 20, 1913, p. 2207.

would be inadvisable, even if the hemorrhage was severe, to transfuse immediately, as anything that raises the blood-pressure will be likely to cause a return of the hemorrhage from the open vessel. Later, after the hemorrhage has ceased and sufficient time for thorough coagulation has passed, the extremities, one at a time, may be released and the blood contained in them allowed to return to the general circulation.

Continued bleeding from the lungs (especially when cavities exist and a serious hemorrhage has taken place, or seems likely to occur) is one of the most important indications for the use of lung compression. Other indications, as previously suggested, are the presence of pus in a cavity in the lungs, and bronchiectasis. For either of these conditions lung compression is becoming more and more popular with specialists in tuberculosis. It is also wise, perhaps, to compress a lung when, in spite of some weeks of proper treatment, the disease continues to spread in it, the other lung being normal.

The gases that may be injected into the pleural cavity are nitrogen, oxygen and nitrogen, oxygen and air, or air and nitrogen. If only temporary compression is desirable, air, or a gas rich in oxygen seems indicated, as its absorption is more rapid. If a prolonged compression is desired, nitrogen should, perhaps, be used, as it is less readily absorbed, and therefore the compression is longer continued. A mixture of air and nitrogen is perhaps a good combination when a brief compression is desired, and being more rapidly absorbed than nitrogen, will allow a decision as to the ability of the patient to stand this compression before using the longer compression by nitrogen. It has also been urged that air compression is safer than that by nitrogen from the fact that if gas bubbles enter the circulation, the air bubble is more quickly absorbed than the nitrogen bubble. Good technic with proper instruments, however, should preclude such an accident.

If compression is once done and its continuance is desired, more gas should be injected before all of that previously injected is absorbed, as after an injection has once been made, and the pleural surfaces have come together, they become more or less adherent and it is difficult to inject the gas again into this pleural cavity.

Night-Sweats.—This debilitating symptom is very characteristic of tuberculosis, and may occur even without much afternoon or evening fever; generally, however, it follows such increase of temperature. Therefore, the rest and fresh-air treatment that prevents a rise in temperature will also ameliorate or prevent the night-sweats. If, however, typical cold night-sweats occur, nothing in the way of medication more successfully prevents them than atropin, 1/200 to 1/100 of a grain, given dry on the tongue at bedtime. The hydrotherapeutic measures already advised, that is, the warm water, and later cold water morning spongings are of value as preventives. If the patient is at rest and is getting no exercise, good massage followed by an alcohol rub is an excellent method of stimulating a more healthy circulation in the skin and muscles, and diminishing the tendency to profuse perspiration. The avoidance of constipation, a healthy circulation and good activity of the kidneys, all prevent night-sweats and the accumulation of toxins in the blood. If there is much circulatory weakness, several doses of strychnin sulphate a day, or digitalis, may also prevent night-sweats.

Diarrhea.—Simple diarrhea occurring in tuberculosis patients generally means either that the patient becomes chilled, or that the diet is incorrect. Correction of these conditions will soon stop such a diarrhea. Tuberculous diarrhea is a serious complication not only of pulmonary tuberculosis, but also of any other form. It often occurs in the last stage of the disease. Rest in bed and a carefully selected diet should be the treatment. Whether the diet consists of milk alone, or of a little meat and eggs with milk, should depend on the patient. Generally, vegetables, fruit and even much cereal should be temporarily withheld.

Bismuth subcarbonate may stop the diarrhea, but bismuth should not be long continued. Lime-water may be of benefit. If the kidneys are normal and there is no albuminuria, phenyl salicylate (salol) is good treatment. At times, one of the creosote combinations is valuable. The administration of opium in some form may be necessary before diarrhea can be checked, and in the last stages of tuberculosis diarrhea may not be preventable. Colon washing with warm physiologic saline solutions is sometimes markedly sedative and of value. The bowels should always be kept especially warm, and the patient with diarrhea should not be subjected to intense cold.

Dyspnea.—If the patient is in the last stages of pulmonary tuberculosis and must soon die, there is no excuse for not preventing the air-hunger, and morphin administered in properly selected, small doses, will often relieve the dyspnea. In the very last stages, if the patient cannot be out of doors to get an increased amount of oxygen, he may be given oxygen inhalations. But oxygen inhalations as a curative procedure are useless and may even do harm.

The Pneumonic Type of Pulmonary Tuberculosis.—Such a condition is likely to occur as a part of acute miliary tuberculosis, but it may develop in a lung as an acute exacerbation of a chronic tuberculosis. The disturbance may be ushered in with a chill, high, irregular temperature, frequent, short cough, considerable dyspnea, at first without physical signs of gross consolidation, but later showing in a part of a lobe, or even the whole lobe, the usual pneumonic signs, even with rusty sputum. The rusty expectoration soon disappears, however, and yellowish, greenish sputum, perhaps blood-streaked and loaded with tubercle bacilli, occurs. The prognosis is very serious, but the acute exacerbation may cease. The treatment is not dissimilar from that of an ordinary pneumonia.

Laryngeal Tuberculosis.—The prognosis of this condition has, up to recent years, been considered very bad indeed, but with more skilful treatment by throat specialists, with the added rest-cure and with tuberculin treatment, many such cases are aborted and the lives of the patients saved. The instances of tuberculosis of the larynx are rare in which, preceding or subsequent to the beginning of the laryngeal disease, some portion of the lungs will not be found affected.

The exact local treatment of a tuberculous larynx depends, of course, on the location of the ulcer or ulcers. If they are so situated that swallowing is very painful, anesthetizing sedatives must be used. Various preparations of silver, lactic acid and menthol are used by different clinicians to aid in healing the ulcers, but the tuberculin treatment, properly used, is probably always advisable.

(To be continued)

Work for All.—Preventable diseases are problems for all the people, and all the people should aid in finding an economic solution.

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THE MECHANISM OF THE TRANSMISSION OF PLAGUE BY FLEAS

The epidemiologic importance of the flea in the transmission of the plague is now generally recognized. The Commission for the Investigation of the Plague in India indicated as the result of its work during 1906 and 1907 that, when control of the experimental conditions had once been obtained, transmission of plague from one animal to another could readily be brought about by fleas; and it further made the very important observation that only in the presence of fleas did an epizootic among rats or guinea-pigs ensue. Close contact with infected animals, including the devouring of infected carcasses, was occasionally followed by a case of plague, but no spread of the disease occurred. In a number of experiments animals allowed to remain in animal-houses in which epizootics had occurred and in plague-infected native quarters became infected; but no infection resulted if the simplest measures were taken to prevent the access of fleas — indicating that the infection was resident in the flea population.

Among the various methods suggested whereby the flea may transmit plague have been: ingestion of the infected fleas by animals; mechanical conveyance of the bacilli from the infected to the healthy animal by the proboscis of the flea; infection of the salivary glands of the flea, inoculation with the bacilli then occurring through the deposition of the saliva; infection of the feces of the flea, which, after being deposited on the skin of the host, may be injected by the pricker or rubbed into wounds made by the pricker. It is admitted that animals may be inoculated with plague by means of the dejecta from infected fleas. The hair of the flea-infested rat, especially in the areas from which the animal cannot dislodge the parasites, such as the back of the neck and root of the tail, is often sprinkled with the dried excrement of the fleas, and the animal is frequently seen scratching itself. Bacot and Martin,[1] who have been engaged at the Lister Institute for Preventive Medicine in London in researches on the mechanism of transmission of plague by fleas, state that they have long felt dubious as to whether the procedure just described was the only, or even the principal, method by which infection is conveyed. In comparison with the masses in the fleas' stomachs, the feces do not as a rule contain many bacilli, and soon dry up. These investigators also believe that bacilli which have grown in the stomach of the insect are not of a high degree of virulence. On behalf of the advisory committee appointed by the Secretary of State for India, the Royal Society, and the Lister Institute, the British investigators set out to ascertain whether or not the flea could infect during the act of sucking, and found that, under conditions precluding the possibility of infection by dejecta, two species of rat-fleas, *Xenopsylla cheopsis* and *Ceratophyllus fasciatus*, fed on septicemic blood, could transmit plague during the act of sucking, and that certain insects suffering from a temporary obstruction at the entrance of the stomach were responsible for most and probably for all of the infections obtained.

How complicated the conditions leading to the transmission of disease by insects may be is well illustrated by the foregoing facts. Only an expert entomologist can succeed in discovering the essential details of bodily structure and function on which the transference of the bacilli depends. Bacot and Martin found that in a proportion of infected fleas the bacilli developed to such an extent as to occlude the alimentary canal at the entrance to the stomach. The growth of the pest begins, apparently, in the intercellular recesses of the proventriculus, and is so abundant as to choke this organ and extend to the esophagus. Fleas in this condition are not prevented from sucking blood, as the pump is in the pharynx; but they only distend an already contaminated esophagus, so that some of the blood is forced back into the wound on the cessation of the pumping. Such fleas are persistent in their efforts to feed, and this renders them particularly dangerous. A flea suffering from obstruction does not necessarily perish, and in the course of some days its alimentary passage may again become pervious. It is, however, incapable for the time being of imbibing fresh fluid and is therefore in danger of drying up if the temperature is high and the degree of saturation of the atmosphere low. The British investigators are led to wonder whether this fact may not to some extent explain why epidemic plague in India is confined to the cooler and moister seasons, and particularly why in northern and central India the epidemics are abruptly terminated at the onset of the dry, hot weather.

1. Bacot, A. W., and Martin, C. J.: Observations on the Mechanism of the Transmission of Plague by Fleas, Jour. Hyg., Plague Supplement III, 1914, p. 423.

DIFFERENTIATION OF GAUCHER'S DISEASE AND OTHER DISEASES OF THE SPLEEN

Among the large group of diseases attended by splenomegaly is a specific form presenting a definite clinical and pathologic picture and known as Gaucher's disease. Fourteen authentic cases have been reported,

the first by Gaucher in 1884, after whom it has been suggested that the disease be named. N. E. Brill and F. S. Mandelbaum,[1] in a recent review of the literature, have brought together the chief facts concerning this condition, a brief summary of which may be helpful.

It is a primary, chronic disease of unknown origin, characterized by progressive enlargement of the spleen, hence also called primary splenomegaly, and is followed by enlargement of the liver, brownish-yellow discoloration of the skin, conjunctival thickening, persistent leukopenia, a tendency to hemorrhages and the absence of marked discomfort. It is of familial occurrence and has been ascribed to the influence of an endogenous toxin, of an enzyme manufactured by the spleen, of infection by protozoa, tubercle bacilli, etc. It has been asserted also that it is a form of malignant disease, but evidence to establish any one of these possible factors as the cause is wanting.

A characteristic of the disease is the presence of peculiar large cells throughout the hemopoietic system. These cells are round or oval, from 20 to 40 microns in diameter, and contain from one to four or more nuclei. The spleen always retains its normal shape, but varies in size and weight according to the duration of the disease. Scattered throughout the pulp are the typical cells. Large round or irregularly shaped alveolar spaces, whose walls are formed by connective tissue lined by endothelium, displace the normal splenic structure. The liver is also enlarged proportionately to the duration of the disease and there is a great increase in the interlobular connective tissue, in the meshes of which are found numerous typical cells, similar to those seen in the spleen. In the lymph-glands the typical cells are found in the lymph-sinuses and between the pulp-cells. The bone-marrow is always red, usually soft, and the typical large cells are found either singly or in groups. There may be hypertrophy of the lymphadenoid tissue in the lower ileum and cecum; the intestinal, uterine, and thigh muscles have been found to contain pigment granules.

The disease is insidious in its onset and may be unattended by subjective symptoms. It usually begins early in life, appearing before 12 years of age in the majority of cases reported. Females are more frequently affected than males, and often more than one child in the same family is affected. In addition to the slowly progressive splenic enlargement causing protrusion, there is a peculiar brownish-yellow pigmentation of the skin of the face, neck and hands early in the disease, and a tendency to hemorrhages (epistaxis, bleeding from the gums and ecchymoses in the skin). A slowly growing brownish-yellow wedge-shaped thickening of the conjunctiva, affecting first the nasal and later the temporal sides, is another characteristic change. Persistent leukopenia is present. Early in the disease the red count is normal; later, however, a mild anemia of the chlorotic type develops. As the disease becomes more advanced, emaciation is a noticeable feature. The absence of any great pain is striking. The disease is slowly progressive in its course, the average duration of reported cases being 19.3 years; death is usually due to some intercurrent affection.

Splenic enlargement being a characteristic feature, Gaucher's disease must be differentiated from other conditions attended by splenomegaly, and especially those running a chronic course. Banti's disease and Gaucher's disease have many features in common, but the former is characterized by jaundice, pallor of the skin, ascites, less enlargement of the spleen and liver, absence of conjunctival lesions, and a shorter duration. The characteristic blood-picture of chronic splenomegalic acholuric jaundice with its normoblastic and megaloblastic crises, serves to differentiate this condition from Gaucher's disease. Hanot's disease is differentiated by the presence of jaundice, leukocytosis and a moderate enlargement of the liver and spleen. Hodgkin's disease associated with an enlarged spleen may occasion difficulty in diagnosis, but in this are seen the enlarged lymph-glands and the periods of fever. The definite blood-changes in pernicious anemia and the leukemias are quite diagnostic. In no one of these diseases is the enlargement of the liver and spleen as a rule so pronounced as in Gaucher's disease.

There is no specific treatment yet known. Splenectomy has given better result than anything else. Roentgen-ray treatment has been tried, and although the spleen is temporarily reduced in size, the disease is not checked. Arsenic has been the most important drug used, but it has very little influence on the progress of the disease, concerning the real nature of which we are in the dark.

1. Brill, N. E., and Mandelbaum, F. S.: Am. Jour. Med. Sc., December, 1913.

RURAL SCHOOL CONDITIONS IN THE UNITED STATES

One of the most important committees appointed by the Council on Health and Public Instruction of the American Medical Association is that on cooperation with the National Education Association. This committee, appointed two years ago, has been working with a similar committee appointed by the National Education Association on the subject of school hygiene. The first year of the committee's existence was devoted largely to a survey of the field and a consideration of what activities should be first undertaken. After careful discussion, the committee decided that the rural school was more in need of attention and assistance than the city school. Then the question arose as to the amount of available information concerning rural schools and schoolhouses. Surprising as it may seem, it was found that little was known of the actual conditions of rural schools in the different states. A preliminary survey was accordingly undertaken with a view to

remedying this defect. Through the United States Bureau of Education, Professor Dressler of Nashville, Tenn., made a careful study of a large number of country school districts in the South. Special surveys in Connecticut, Vermont and New York, as well as general investigations which gathered statistics from every state in the Union, and special studies of rural conditions in Idaho, Massachusetts, Pennsylvania, New Jersey and Virginia, resulted in the accumulation of a large mass of information which is now being digested and drawn up in the form of a report. Professor Dressler's work will be made public through a special report issued by the United States Bureau of Education. While the work of the committee is only begun, enough has been learned to show that the sanitary condition of rural schools is not by any means so satisfactory as was generally supposed. In the New York *Times*, March 8, appeared a lengthy article based on a statement by Dr. T. D. Wood of Columbia University, chairman of the education committee.

After describing the organization of the committee and the work which it has undertaken, Dr. Wood said: "We grew up with the notion that the schoolchildren in the country were bound to be much healthier than the children of the cities. Our parents always credited the little red schoolhouse for their excellent constitutions. Of late years, however, there has been a good deal of suspicion cast on that same little red schoolhouse. We have begun in this day of sanitation and medical inspection to have our doubts about those unqualified benefits."

Dr. Wood then gives a few specific instances in proof of the general proposition that the country schoolchild is from 15 per cent. to 20 per cent. more defective than the city child. In Pennsylvania, a study of 1,831 rural school districts was made and the health of the children in these districts was contrasted with the health of the schoolchildren in Harrisburg, Pittsburgh and Altoona. The percentage of defective children in Altoona was 69 per cent., in Pittsburgh 72.2 per cent., while in the rural districts studied, the aggregate of defective children amounted to 75 per cent. This means that three-fourths of the 294,427 country schoolchildren in Pennsylvania are in need of special care and treatment, while even in New York City only 72 per cent. of the children are at all defective.

The investigation of specific defects gives the same results. For instance, a comparison of the schoolchildren of Orange County, Virginia, with those of New York City, shows that with all of the surroundings and disadvantages of city life, the number of New York schoolchildren with lung trouble amounts to only a fraction of 1 per cent., while 3.7 per cent. of all the schoolchildren in Orange County, Virginia, suffer from some affection of the lungs. When the nutrition of rural schoolchildren was considered, it was supposed that here, of course, the country child would greatly surpass the child in the city, yet the average of malnutrition among the schoolchildren of New York City is 23.3 per cent., while that of rural schoolchildren in the districts investigated is 31.2 per cent. The same startling result is found when the figures for mental defectives are compared. Statistics from twenty-five cities and from rural districts in Pennsylvania, Massachusetts, New Jersey, Idaho and Virginia were compared, showing that the average of mental defects among city children was 0.2 per cent., while the average among rural schoolchildren was 0.8 per cent. Heart-disease is twice as prevalent among country children as among city schoolchildren. City schoolchildren have only 0.13 per cent. of curvature of the spine, while rural schoolchildren have 3.5 per cent. Ear troubles are five times and eye troubles are four times as frequent among country children. Adenoids are found in city schoolchildren in 8.5 per cent., but in the country the percentage is 21.5. The children in twenty-five cities showed an average percentage of enlarged tonsils of 8.8, while a similar number of country children showed over 30 per cent., and in Idaho the percentage ran up to 43.9.

Discussing the causes for these amazing and startling conditions, Dr. Wood finds that even in the slums, where the pinch of poverty is the sharpest, the food is better prepared than it is in the country, while the distance from dentists, oculists and clinical advantages accounts for the large number of defects of sight, hearing and teeth. Country houses are often drafty and overheated. The chances for house infection are greater and children are more exposed to cold, heat and dampness. The schoolhouses are often old and carelessly built and have insufficient equipment. In seven states there is no regulation of the sanitation of country schools. Heating is generally by means of a stove, and bad ventilation is usually the result. Seating accommodations are bad and general sanitary conditions often unspeakable. Frequently the only provisions for cleanliness are a pail of water, a dirty basin and a common towel. Drinking arrangements are bad and drinking-water often contaminated. Dr. Wood sums up the situation thus: "Now take into consideration the many other contingencies which the country child has to meet — physical labor, chores before he starts for school in the morning, a badly assorted breakfast, a long walk over bad roads — then subject him to direct infection, to bad water, and it is small wonder that he falls prey to a dozen maladies more readily than the city child."

The results of this survey of rural schools cannot fail to shatter some of our previously conceived views regarding rural conditions, and at the same time to point out the remedy. Not one state in five to-day provides for its country schoolchildren. In most of the cities some kind of supervision and care of schoolchildren is maintained, but rural schools have so far been left very largely to shift for themselves. "The welfare of our country," says Dr. Wood, "depends on no factor more indispensable, more vital, than the welfare of our rural

life. Our finest crops are our children. The farmer does not see this truth. If he did, he would rise up and demand state protection for his youngsters — a more important matter than tariff regulation."

A few days after the publication of Dr. Wood's article in the *Times*, the New York *Evening Post*, in a long editorial, discussed his statement, which it characterized as of exceptional interest. "It is not often," says the *Post*, "that so striking a survey of statistical results in the domain of health bears such clear marks of trustworthiness and sobriety." After reviewing the article and Dr. Wood's conclusions, the *Post* indulges in some general optimistic reflections. It says: "Just as surely as the child of the city is more free from defects and ailments than the child of the country, just so surely is the city child of the present in better case than the city child of the past. If in spite of crowded homes, impure city air, lack of recreation facilities, in spite often of the poverty into which he is born and perhaps the vice with which he is environed, the city child makes a better showing than the country child, it is because of the multitude of benefits which have been bestowed on him by the progress of science and the steady advance of civic care, enlightenment and responsibility."

In the improved condition of the city child as contrasted with the country child, the *Post* finds reason for believing that the condition of the child in the country will be speedily corrected now that attention has been brought to the situation.

The work of the joint committee of the American Medical Association and the National Education Association has proved already of the utmost value and its activities have only begun. These two powerful organizations representing the organized professions of teaching and medicine can, during the next five years, effect a marked improvement in the health conditions of American schoolchildren.

THE ENTRANCE OF THE INTERNAL SECRETION OF THE PANCREAS INTO THE CIRCULATION

How the specific products of the ductless glands or so-called glands with internal secretion reach the circulation is by no means as yet definitely ascertained. Two possibilities are open: one, by the indirect route of the lymph-stream whereby they are ultimately discharged from the lymphatics into the blood; the other, by direct transference from the gland-cells to the blood itself. Inasmuch as we have not as yet learned how to test for many of the peculiar products of internal secretion in the blood or lymph, it has been necessary to find the evidence on the point under discussion in somewhat indirect ways. In the case of the adrenal bodies alone is it at present possible to detect their product, epinephrin, by reliable methods; and here the experiments point to the blood as the immediate recipient thereof.

Some years ago Biedl reported the frequent occurrence of glycosuria in animals in which, either by drainage to the exterior or by the obstruction of the thoracic duct, the lymph was prevented from reaching the general circulation. In apparent harmony with this are reported cases of chyluria, due to a rupture of the chyle-duct or cistern, combined with glycosuria. Such observations have readily suggested the conclusion that some secretory product of the pancreas essential for normal carbohydrate metabolism is carried into the blood-stream by way of the thoracic duct lymph-flow, and that when the latter is diverted or interfered with, glycosuria results as the most prominent symptom of the lack of the pancreatic product.

Here, then, was something that could be interpreted in favor of the lymphatic path for the internal secretion of the pancreatic gland. It is not the only interpretation possible, however. Nervous factors might also be drawn into the explanation of the glycosuria as the result of operative interferences. Carlson and Drennan[1] of the University of Chicago have further remarked that ligation of the thoracic duct may cause a temporary hyperglycosuria owing to injury of the liver by the edema from the back-pressure of the lymph; and the fistula experiments do not exclude a temporary glycosuria due to the operation and the anesthesia. Furthermore, Carlson and Drennan have carefully repeated, with negative results, Biedl's experiment in which a fistula of the thoracic duct was produced. By ligature of the jugular vein and anastomosis with the thoracic duct the lymph supposed to contain the pancreatic product was discharged into the external jugular, which was slit open and secured to the skin, allowing free escape of the lymph. The urine showed no sugar at any time.

Inasmuch as extirpation of the pancreas brings on diabetes in from six to ten hours, while complete elimination of the thoracic lymph for from thirty-two to thirty-three hours does not induce even mild glycosuria, it is evident that the internal secretion of the pancreas enters the blood direct and not via the thoracic duct.

ORGANISMS IN CONDENSED MILK

It may come as a distinct surprise to many persons to learn that the process of manufacturing condensed milk has not yet passed the stage of crudest empiricism. Certain general rules of technical procedure and manufacturing operations are followed as closely as the experience of factory superintendents or others in charge of the plants will permit; but the art of preparing a uniform product can scarcely be said as yet to rest on anything like a scientific basis. Regarding one feature of condensed milk, namely, its cytology and

1. Carlson, A. J., and Drennan, F. M.: The Alleged Discharge of the Internal Secretion of the Pancreas into the Lymph. Proc. Soc. Exper. Biol. and Med., 1914, xi, 71.

bacteriology, almost nothing was known until quite recently.

Natural milk containing all of the original constituents of the mammary secretion is such a favorable medium for the development of bacteria that it must be thoroughly sterilized if it is to be preserved sweet for any length of time. Accordingly, it is said that the more liquid brands of preserved milk, which are found on the market in small numbers, are bacteriologically sterile. Condensed milk, on the other hand, represents a product that is concentrated to a quarter or more of its original volume, with an addition of sugar. Such a viscid, saccharine medium is relatively unfavorable to bacterial growth and will therefore keep for a long time even though not free from living organisms. Not only is it unnecessary from a commercial point of view to sterilize it, but the exposure to temperatures requisite for effective destruction of bacteria tends to deteriorate the condensed product in other ways. It becomes brownish and solid. Milk is usually condensed by evaporation under diminished pressure at a temperature considerably below the boiling-point of water.

A British investigator[1] at St. Bartholomew's Hospital in London, who has lately conducted an extensive examination of the fluid or semisolid products ordinarily termed "condensed milk," corroborates the experience of his predecessors in stating that he has never found milk of this type sterile. It is only fair to state that these milks are not as a rule sold as sterile any more than is market-milk even of the certified grade. The lack of sterility is no reason for condemning them; they must be judged by "the potential harmfulness of their bacterial count."

With regard to the cytology of the condensed milks obtained in London, Andrews[1] concludes that none of the samples ought to be condemned as containing pus. It is quite as possible for an abundance of body-cells to be present in such products as in market-milk. As a matter of fact, there appears to be a comparative paucity of cells in the cheap machine-skimmed condensed milks. The explanation of this unexpected improvement over what may be expected from inferior products is probably to be sought in the mode of preparation now very common both in this country and abroad. In passing through the centrifugal separators universally found in dairy establishments, not only is the cream removed, but a considerable deposit including much of the cellular content of the milk is withdrawn along with other débris and dirt.

Condensed milks may contain the types of bacteria commonly found in fresh milk — *Bacillus coli*, streptococci, a few staphylococci and *B. enteritidis sporogenes* — together with ordinary air contaminations such as *B. subtilis* and *mesentericus*. Even a good and popular brand of Swiss condensed milk yielded a moderate number of colonies of *Staphylococcus albus*. Thirty-one samples of cheaper brands yielded almost pure cultures of staphylococci, among which *Staphylococcus pyogenes aureus* was conspicuous. Inasmuch as these organisms can multiply in tins of condensed milk, the actual numbers present will depend largely on the age of the sample.

The proper attitude for the hygienist to take in the face of the facts may fairly be debated. Dr. Andrews reasonably argues that inasmuch as every one who takes fresh milk consumes in bulk the same bacteria found in small quantities in condensed milks without suffering any ill effect, these may be regarded as comparatively unobjectionable. But when the question of the sanitary significance of the almost pure cultures of staphylococci is raised, the subject cannot be passed over quite so lightly. Condensed milks are used largely among the poor, and hence their harmful consequences fall on the classes most susceptible. Quoting Andrews: "Even granting the blameless nature of the original milk, can we view without concern the circumstances which convert the tin of condensed product into an almost pure culture of pyogenic coccus? Is a culture of *Staphylococcus aureus* in condensed milk, numbering more than a quarter of a million cocci per cubic centimeter, a wholesome and desirable food for an adult, much less for an infant?" Whatever the answer to this may be, it seems likely that efficient pasteurization before the condensing process would prevent the presence of such organisms in the final product. Fortunately, they are absent from the majority of condensed milks, or present in only small numbers.

1. Andrews, F. W.: The Cytology and Bacteriology of Condensed Milks, Jour. Path. and Bacteriol., 1913, xviii, 169

THE BEHAVIOR OF LEVULOSE IN THE BODY

The sugar levulose is commonly associated, in the minds of those to whom the name has any definite import, with the extremely uncommon anomaly known as levulosuria, or with the use of this carbohydrate as a test for the functional efficiency of the liver. Alimentary levulosuria, in the sense in which it was first applied by Strauss, is supposed to be an expression of a decreased tolerance for levulose manifested in conditions such as cirrhosis of the liver, phosphorus poisoning, extreme stagnation of the bile, etc. A true spontaneous excretion of levulose alone, although known to occur, belongs to the rarities of clinical experience and has not been demonstrated to bear any relation to the familiar type of diabetes. In the latter disease levulose has been described as accompanying the eliminated glucose in very severe cases. This is, however, a condition quite different from the pure levulosuria just referred to.

It is surprising that levulose should so long have been comparatively neglected by both physiologist and physician. This sugar is not a stranger to the alimentary tract of man; on the contrary, it is a component of one of the commonest of foodstuffs — cane-sugar — and it

likewise finds its way into the diet in the form of invert sugar (honey) and fruit-sugar. When not furnished preformed, it is speedily liberated from cane-sugar in the digestive tract by the activity of the inverting enzyme sucrase abundantly present in the small intestine.

A familiar indication of the capacity of the organism to assimilate and utilize any particular type of sugar is found in its ability to function as a producer of glycogen. Glucose is, of course, par excellence, a source of the deposition of glycogen in the liver; but it is now well known that cane-sugar (sucrose), which yields a mixture of glucose and levulose (fructose) by alimentary digestion, and levulose itself, are likewise quite efficient in promoting the storage of glycogen. Despite the fact that levulose has a chemical structure somewhat unlike that of glucose, the glycogen from these two sugars is in every respect identical, so far as present knowledge permits a final conclusion in the matter. The carbohydrate stored in the liver is in every case a polysaccharid of glucose, into which it is readily converted on demand in the body.

Here lies a problem. How is the invariable conversion of levulose into glucose-yielding glycogen to be explained? The old-time physiologist might perchance be content to pass over the apparent anomaly here presented, in the little-comforting belief that all sugars are essentially alike. But the modern biochemist, trained to recognize stereochemical as well as ordinary structural differences among isomeric compounds, is not satisfied with such slipshod explanations. He realizes that structurally related, though not identical sugars like glucose and fructose — dextrose and levulose — readily experience molecular rearrangements and can become transformed into each other outside of the body under the influence of alkalies. The possibility of a similar conversion in the organism is thus established. One wonders, therefore, whether the daily intake of levulose, either free or in the potential form of cane-sugar, is converted directly into glycogen by the liver, or whether the immediate product is glucose which is then deposited as glycogen in the conventional way.

Perfusion of the isolated surviving liver with levulose-containing fluids has now shown that they experience a decrease of levulose with a simultaneous increase in the content of glucose.[1] This fact not only has a considerable theoretic interest, but also explains the clinical observations made in the past, which indicate the possibility of an increased output of glucose when levulose is fed to diabetic patients. It further substantiates the current view that all glycogen is essentially glucose-yielding in character, whatever the sugar antecedent from which it is derived. The possible mechanism of spontaneous levulosuria is likewise thereby elucidated as an upset in the intermediary conversion of levulose to glucose.

1. Isaac, S.: Ueber die Umwandlung von Lävulose in Dextrose in der künstlich durchströmten Leber, Ztschr. f. physiol. Chem., 1914, lxxxix, 78.

Current Comment

THE NON-FORMATION IN LEUKEMIA OF AGGLUTININS FOR TYPHOID BACILLI

We recently commented on the fact that in a very small percentage of cases of typhoid fever there seems to be no formation of agglutinins for typhoid bacilli.[1] In a case of chronic leukemia with typhoid fever Moreschi[2] failed to find any indications of agglutinin formation during the entire course of the fever. Taking his cue from this observation, he studied the effects of the intravenous injection of typhoid vaccine in eight leukemics. In two the leukemia was lymphatic, in six myelogenous. In normal persons and in patients with certain other diseases the quantity of vaccine injected led to the production of agglutinins in considerable quantities; but in the leukemic patients there was absolutely no response in six, while in two, both of whom were being treated with the Roentgen ray, with improvement, there was only a minimal response. It appears then that in leukemia the introduction of typhoid bacilli does not produce agglutinins. This may be accounted for by assuming that, owing to the excessive number of leukocytes, the antigen is destroyed or modified so rapidly that it has no chance to exercise its usual antigenic functions, or that in leukemia the power to produce antibodies is lost through changes in the hematopoietic organs; for there is good reason to believe that they are directly concerned in antibody production. The fact that the power to form agglutinins is lost in both forms of leukemia would seem to speak against the first assumption, because we do not regard the different kinds of leukocytes in lymphatic and myelogenous leukemia as equivalent. Moreschi made an additional observation in the course of this work, namely, that in the leukemics the injection of the typhoid vaccine caused no rise of temperature, whereas in the controls a slight fever occurred regularly. This raises the question whether or not febrile reaction is essential to the formation of antibodies. Further studies with other antigens are necessary to answer these questions. The fact that in leukemia the power to produce typhoid agglutinins is lost stimulates interest also in the question whether or not the function of forming antibodies is lost or modified in other diseases.

ABOLITION OF SPECIAL TAX ON PHYSICIANS

After many years of effort the physicians of Virginia have finally won in the fight to abolish the professional tax levied on doctors in that state. A bill doing away with the collection of this tax after the present year passed both houses of the legislature and recently became a law without the governor's signature. Virginia was one of five states to impose such a tax, the others being Delaware, Louisiana, Georgia and North Carolina. This law has been in force in Virginia for many years. Just why it was enacted in the beginning is difficult to say. Its repeal was opposed only on the

1. Inagglutinable Typhoid Bacilli, Current Comment, THE JOURNAL A. M. A., April 4, 1914, p. 1099.
2. Moreschi: Ztschr. f. Immunitätsforsch., 1914, xxi, 410.

ground of loss of revenue to the state of $43,000, the amount paid by physicians under this law. Commenting on the passage of the repeal bill, the Richmond *Leader* said:

> Virginia has demanded services of physicians and has then taxed them for performing it. We have required our physicians to attend emergency cases regardless of compensation. We have ordered them to report promptly the cases of communicable disease that appeared in their practice. We have given them responsible duties in enforcing the vital statistics law, and in return for this — the most extensive public service demanded of any private citizen — we have coolly exacted of the physician a heavy annual tax. A more anomalous situation and one more discreditable to the state could hardly be imagined.

The Roanoke *News* says:

> Roanoke and the rest of Virginia will have to stagger along without it [the professional tax]. Roanoke has eighty-seven doctors, and the income derived from them by the city is approximately $1,500. The license is $15 where a doctor has practiced here two years or under, and $25 for two years and over. . . . While we may groan at losing that $1,500 and wonder where the contraction of Roanoke's income is going to stop, few of us will grieve that the doctor's vocation is to be held as a service to mankind rather than as a business strictly speaking.

Regardless of the conditions which gave rise to such a special burden, there are to-day no reasons which justify the levying of a special occupational tax on physicians, unless a similar tax is levied on all other occupations and professions. The physicians of Virginia are to be congratulated on the successful outcome of their long struggle against injustice. Their example should stimulate the physicians of the other four states to secure the repeal of this unfair tax.

PARALYSIS AGITANS AND THE PARATHYROIDS

The statement has been made that just as forty years ago medicine was dominated by pathologic anatomy and twenty years ago by bacteriology, so to-day is the era of the ductless gland with its internal secretion. The pendulum of opinion tends at times to swing too far, first in one direction and then in the opposite. We are reminded of this by the alleged relationship between the parathyroid glands and paralysis agitans. Some of the symptoms of the latter resemble, it is true, the peculiar muscular behavior noted in animals after removal of the parathyroids. The interrelation appears to go no farther than this analogy, however, when the factors involved are critically analyzed. The reports as to the therapeutic effects of parathyroid medication in paralysis agitans are too conflicting to contribute anything of value to the controversy regarding the etiology of the disease. Examination of the parathyroid glands removed at necropsy from cases of paralysis agitans has revealed no characteristic deviation from the normal. Equally negative is the chemical evidence presented by Dr. Greenwald[1] of the Montefiore Home in New York City. He has previously shown that after parathyroidectomy in dogs there is a marked diminution in the excretion of phosphorus.[2] This persists until tetany appears and even longer. At the same time the blood and serum show an increase in the content of phosphorus above the normal, which can readily be demonstrated before marked tetany has developed. This increased phosphorus content consists almost entirely of those compounds of phosphorus not soluble in acetone, alcohol or ether. Greenwald has argued that if the symptoms of paralysis agitans are due to parathyroid insufficiency one might, in view of the preceding experimental records, expect to find that the amount of acid-soluble phosphorus in the serum of patients suffering from the disease is greater than in that of other individuals. His observations show that this is not the case; and accordingly they do not support the suggestions of Lundberg[3] and of Berkeley[4] that parathyroid insufficiency plays a rôle in the etiology of paralysis agitans. We need scarcely add that negative results of this character do not necessarily vitiate entirely the usefulness of a hypothesis.

1. Greenwald, I.: The Supposed Relation Between Paralysis Agitans and Insufficiency of the Parathyroid Glands, Am. Jour. Med. Sc., 1914, cxlvii, 225.

2. Greenwald, I.: Am. Jour. Physiol., 1911, xxviii, 103; Jour. Biol. Chem., 1913, xiv, 363.

3. Lundberg: Deutsch. Ztschr. f. Nervenh., 1904, xxvii, 217.

4. Berkeley: Med. News, 1905, lxxxvii, 1060.

PUBLIC EDUCATION BY UNIVERSITIES

A striking illustration of the changing conditions in educational ideas may be found in the growing appreciation on the part of leading universities of their responsibility to the public. In former generations a university was regarded as a thing apart, and a college professor was looked on, not only by the humorous paragraphers of the newspapers, but also by the mass of people, as a man living in a world of ideas, without any connection with practical affairs. To-day our leading universities are recognizing not only the opportunity, but also the duty of making available their knowledge for the benefit of the masses. This tendency is highly commendable, especially in the field of public health and prevention of disease. The Harvard Medical School has a standing committee on public lectures which arranges each year for a course of Sunday afternoon talks by members of the faculty. These talks are open to the general public and are on topics of general interest. For instance, last year the course of twenty lectures included such topics as "Preventive Medicine in Relation to Industrial and International Concord," "The Care and Feeding of Young Children," "What the State Board of Health is Doing to Protect the Health of Its Citizens," "The Dangerous Effects of Patent Medicines" and "The Preservation of the Natural Teeth." This year's course includes talks on "Rational Baby Feeding," "Bodily Effects of Rage and Fear," "Spectacles and Eye-Glasses, Their Use and Abuse," and other subjects of practical interest. The lectures given in the past have proved of value and so popular that they are now being issued in little pocket-sized volumes at popular prices under the title of "Harvard Health Talks." In Minnesota the daily press is cooperating in the same kind of work. A series of articles on disease and its prevention by Dr. E. P. Lyon, dean of the University of Minnesota Medical School, recently

appeared in the Minneapolis *Journal*. The University of Missouri is one of the few state universities that have recognized the growing tendency by the organization of a distinct department on public health. A series of bulletins for public reading and distribution are being issued. The five so far completed are on "Bacteria and Disease," "The Prevention of Typhoid Fever," "The Prevention of Contagious Diseases in Schoolchildren," "Resuscitation" and "The Relation of Sight and Hearing to Early School Life." Each of these universities has apparently worked out its plans in accordance with the needs of its own particular field. In Boston, popular Sunday afternoon lectures, in Minnesota, newspaper articles, and in Missouri, pamphlets on specific subjects seem to meet existing conditions. The significant fact, however, is that our universities are recognizing their responsibilities to the public and are making serious, intelligent and practical efforts to meet them.

THE PRODUCTION OF CIRRHOSIS OF THE LIVER AND CHRONIC NEPHRITIS BY REPEATED PROTEIN INTOXICATION

Longcope observed that sometimes in the course of chronic nephritis acute attacks of fever occur with edema, urticaria and eosinophilia—attacks that resemble serum disease. This led him to wonder if some cases of nephritis might not depend on a condition resembling anaphylaxis or protein intoxication. In order to determine the effect of repeated protein intoxications on the structure of the organs and tissues, he gave several injections of small quantities of horse-serum and egg-white to dogs, cats, rabbits and guinea-pigs previously sensitized to these proteins. Marked cellular injuries resulted with inflammatory reactions of a subacute and chronic nature, which were observed in the heart-muscle and kidneys of all the animals and in the liver of the cats and dogs injected intravenously. The changes in the kidneys were those of a well-marked nephritis: degeneration and necrosis of the cells in Henle's loops, less marked elsewhere, with extensive round-cell infiltration and formation of connective tissue as well as acute and chronic alterations in the glomeruli. Well-marked necrosis developed in the liver, mostly in the outer portions of the lobules with chronic inflammatory processes, resembling the portal type of cirrhosis. After intraperitoneal injections chronic inflammatory changes developed in the peritoneum.[1] These results are highly interesting because they suggest the possibility that in certain instances at least degenerative and cirrhotic processes in man may result from protein intoxication. We might expect this to occur especially in persons who are susceptible to certain foods, notably egg-white, and who on that account would be subjected to repeated intoxications. Certainly the possibility of such a genesis of some cases of chronic nephritis and cirrhosis of the liver merit thorough consideration. In this connection it is of interest to note that Bürger and Dold[2] find that bacterioproteins and also homologous protein, after being altered in various ways, attract leukocytes, especially after having been treated with unheated serum. This indicates that the fluids of the body may so act on proteins as to produce leukotactic products.

1. Longcope: Jour. Exper. Med., 1913, xviii, 678; Tr. Assn. Am. Phys., 1913, xxvii, 497.
2. Bürger and Dold: Ztschr. f. Immunitätsforsch., 1914, xxi, 378.

A COMPARISON OF LEUKOCYTES AND LYMPHOCYTES

Aside from the genetic and morphologic distinctions between the usual leukocytes and lymphocytes found in the body, other evidences of functional differences are not wanting. The two types of cells are endowed in quite unlike measure with an outfit of enzymes. Although proteolytic ferments have frequently been described for the polymorphonuclear leukocytes, and an important rôle has been assigned to them in relation to certain pathologic processes, such enzymes seem to be lacking in the lymphocytes. The latter are also described as being deficient in oxidases which are easily demonstrated in the leukocyte accumulations represented by pus. These facts have suggested the possibility of finding some more specific chemical differentiation between the two types of colorless blood-cells. Iron is a constituent of many cells of the organism aside from the red blood-cells in which it is found in relative abundance. This element has often been looked on as one of the carriers of the fermentative properties of cells, and particularly the function of oxidation. In view of the apparent dissimilarity of the leukocyte and lymphocyte in respect to this very feature, as exhibited in the relative abundance of oxidase, it seemed not unlikely at one time that the two types of cells would be found to carry a decidedly unlike content of iron. According to the recent investigations of Saneyoshi[1] in the medical policlinic at Freiburg in Germany, there is, however, no essential difference in this respect. The leukocytes are no richer in iron than their companion lymphocytes. It will be necessary, therefore, to seek other evidences for the chemical basis of the differentiations between them in physiologic processes.

1. Saneyoshi, S.: Vergleichende Untersuchungen über den Eisengehalt von Leukocyten und Lymphocyten. Biochem. Ztschr., 1914, lx, 339.

AN ANTIDOTE FOR "BICHLORID" POISONING

In a recent issue of a prominent medical journal, the statement is made that mercuric chlorid poisoning can be treated by the use of sodium phosphate with excess of sodium bicarbonate. Thus, editorially, the journal says: "This solution, it is claimed, instantly converts the bichlorid to the mild chlorid, which can be removed by a dose of castor oil. It is very necessary that the sodium phosphate shall be chemically pure." Attention should therefore again be called to the fact that the names "sodium phosphate" and "sodium phosphite" are so similar that a serious error can be made by the misprinting or misinterpretation of a single letter. Sodium phosphite has been suggested as an antidote to mercuric chlorid because it acts as a reducing agent to convert mercuric chlorid into calomel — mercurous chlorid — while the phosphite is changed to phosphate. Sodium phosphate will have no such action on mercuric chlorid because it is already as highly oxidized as possible.

Medical News

DISTRICT OF COLUMBIA

Personal.—Dr. Cressy L. Wilbur, chief statistician of the Vital Statistics Bureau of the Census, has been granted a leave of absence in order that he may assume the directorship of vital statistics in the New York State Department of Health.——Health Officer William C. Woodward gave the seventh and last lecture of the community health series at the Y. M. C. A. Building, Washington, April 3, on "Why a Health Department?"

ILLINOIS

New Officers.—Warren County Medical Society at Monmouth, April 3: president, Dr. Philo B. Conant, Roseville; secretary-treasurer, Dr. Harold M. Camp, Monmouth.

New Secretary of State Board of Health.—The State Board of Health at its meeting April 15, elected Dr. C. St. Clair Drake, secretary, vice Dr. James A. Egan, deceased. Dr. Drake is a graduate of the Chicago Homeopathic Medical College in 1890, and has been an official of the Department of Health of Chicago for twenty years and is at present assistant chief of the Bureau of Vital Statistics.

Personal.—Dr Rawson J. Pickard has returned to Maywood after nearly five years of work in the government hospitals in the Canal Zone.——Dr. John R. Tobin, Elgin, has been appointed chief surgeon of the Aurora, Elgin and Chicago Railway, and Dr. Frederick C. Schurmeier, Elgin, assistant chief surgeon.——Dr. Robert Clements entertained the Danville Physicians' Club in his offices, April 2.——Dr. Arthur W. Swift, Belvidere, who was operated on at Rochester, Minn., March 31, is reported to be doing well.——Drs. William C. Robert and Harry E. Kerch have been appointed directors of the Kane County Antituberculosis Society.

Chicago

Baby Week.—Four thousand persons interested in baby welfare will make a thorough canvas of the city next week for funds needed to aid the Infant Welfare Society.

Physicians Organize Glee Club.—The Chicago Medical Society has followed the lead of Baltimore and organized the Chicago Medical Society Glee Club, for which recruits are solicited. Dr. Arthur C. Kleutgen, 903 West Garfield Boulevard, is medical director and soloist of the club.

Ladies' Night at Physicians' Club.—The Physicians' Club of Chicago has provided an attractive program for its annual ladies' night, May 1. After the dinner a lecture will be given by Miss Helen Keller and her teacher, Mrs. Macy, on "The Heart and the Hand," or "the Right Use of Our Senses."

Personal.—Dr. Liston H. Montgomery has been appointed local surgeon of the Pere Marquette.——Dr. Frank J. Novak, who was operated on recently for hernia, has recovered and resumed practice.——Dr. and Mrs. A. Gaebler sail for Europe April 25.——Dr. Alexander A. Goldsmith fractured his right fore-arm while cranking his automobile.

Chicago a Healthier City.—The report of the Commission of Health for the first quarter of 1914 shows a material falling off in the number of cases of and deaths from communicable diseases. During the quarter there were 7,773 fewer cases of measles and 113 fewer deaths; 3,813 fewer cases of scarlet fever, and 353 fewer deaths; 926 fewer cases of diphtheria and 225 fewer deaths; 25 fewer cases of small-pox, and no deaths. There were, however, 1,423 more cases of whooping-cough; 259 more cases of chicken-pox; 251 more cases of mumps, and 56 more cases of typhoid fever. During the quarter there were 9,756 deaths from all causes, equivalent to an annual death-rate of 16.5 per 1,000.

INDIANA

Contract for Sanatorium.—The contract for the construction of the St. Joseph's County Tuberculosis Sanatorium, South Bend, was let March 30 for $7,725.

New Officers.—Twelfth District Medical Society at Fort Wayne, April 8: president, Dr. James W. McKinney, Bluffton (reelected); secretary-treasurer, Dr. Miles F. Porter, Jr., Fort Wayne.

Intern Examinations.—The Indianapolis City Health Board announces that it will hold examinations for applicants for appointments as interns in the City Hospital and City Dispensary, at the office of the Board of Health, April 23 and 24.

Personal.—Drs. W. H. Willis and Walter R. Cleveland have been reelected directors of the Evansville Anti-Tuberculosis Society.——Dr. Herman G. Morgan, city sanitary officer, Indianapolis, was presented by the office force of the Board of Health with a Shriner's pin and a Masonic watch charm, April 4.——At the Huntington County Medical Society meeting, April 1, resolutions were adopted congratulating Dr. William C. Chaffee, Huntington, on reaching his seventy-ninth birthday anniversary.

IOWA

Clean-Up Bulletin.—The first of a series of bulletins on spring clean-up work has been issued by Dr. L. S. Husted, health officer of Muscatine. It is chiefly concerned with the pernicious house-fly.

Personal.—Dr. William A. Benadom, Davenport, was seriously injured by the overturning of his automobile, April 6.——Dr. Charles W. Burt has been elected mayor of Valley Junction.——Dr. Walter L. Bierring, Des Moines, has been reappointed president of the State Board of Health and Medical Examiners for a term of five years.——Dr. and Mrs. George H. Stanger, Boone, have returned from Cuba.——Dr. Martha Welpton, Des Moines, who has been ill in St. Luke's Hospital, Chicago, has recovered and returned home.——Dr. Louis F. Cummings, Hopkinton, was seriously injured by the overturning of his automobile, recently.

Special Bulletin, Iowa State Board of Health.—From the quarterly bulletins of the Iowa State Board of Health for the last three quarters of 1913 a special bulletin has been compiled and issued in the interest of the embalmers of Iowa. It contains the laws of the state concerning embalmers, requirements for license, preparation of bodies for shipment and burial, requirements of undertakers in the way of permits for burial, handling of bodies of persons who have died of quarantinable diseases, methods of disinfection and manner of preventing the dissemination of infection, a description of the infectious and contagious diseases, information with reference to reporting venereal diseases and the laws with reference to vital statistics and blanks on which death certificates and burial permits are to be made. The bulletin also contains a list of the licensed embalmers of Iowa with their addresses. Numerous illustrations of methods of disease prevention are also included.

LOUISIANA

Religion and Medicine.—April 19, the day before the session of the Louisiana State Medical Society, a symposium will be held in the Tulane Theater on "Religion: Its Relation to Hygiene and Medicine."

Conference of Health Officers.—A conference of state health officers will he held April 20 in New Orleans, at which local problems and those relating to joint efforts of the local health officers and the state department will be discussed.

Health Status of the Negro.—The Louisiana State Board of Health has called a conference of health and educational leaders throughout the state, that agreement may be reached concerning immediate practical measures for the betterment of the negro. This meeting will be held in New Orleans, April 24-25.

Personal.—Dr. O. P. Dailey, first assistant at the East Louisiana Hospital for the Insane, Jackson, has resigned, and April 2 his associates and the employees of the institution presented him with a gold Masonic fob, suitably inscribed.——In the case of Dr. E. M. Ellis, Crowley, who was sued for $35,500 by a Greek restaurant keeper for alleged malpractice, the case was decided March 20 in favor of Dr. Ellis, and an additional judgment was given him for professional fees.

MARYLAND

Personal.—Dr. Thomas W. Koon has been elected mayor of Cumberland.——Dr. J. McPherson Scott, secretary to the State Board of Medical Examiners, has been elected mayor of Hagerstown for the third time.——Dr. Paul Wegefarth, formerly assistant to Dr. Harvey Cushing at the Peter Bent Brigham Hospital of Boston, has returned to Baltimore where he will be one of the resident physicians at the Church Home and Infirmary.——Dr. J. Charles G. Macgill, who has been confined to his home at Catonsville with an attack of influenza, is improving.

Measles Ward at Sydenham.—Plans for a building for measles at Sydenham have been laid before the board of awards. The plans call for a one-story structure with provision for fifteen to twenty patients, the cost to be about $25,000. The new building and the edifices now standing at Sydenham can be made to fit into the scheme for a general hospital to be provided out of the $750,000 loan authorized by the legislature. There are about 12 acres of land at

Sydenham and this is declared to be sufficient for a large hospital such as it is proposed to establish.

Legislative Enactments and Appropriations.—The bill requiring the state lunacy commission to remove all criminal insane from the penal institutions has been passed by the legislature and signed by the governor. The following appropriations were made to the state hospitals for the insane and feebleminded. The maintenance appropriations for the next two years are as follows: Springfield State Hospital $160,000, $160,000; Spring Grove State Hospital, $79,000, $86,000; Crownsville State Hospital, $60,000, $60,000; Eastern Shore State Hospital, $30,000, $30,000; Rosewood State Training School, $115,000, $125,000.

The bond issue of $418,000, authorizing new buildings at the five state institutions, is divided as follows: Springfield State Hospital, $110,000; Spring Grove State Hospital, $80,000; Crownsville State Hospital, $100,000; Eastern Shore State Hospital, $100,000; Rosewood State Training School, $28,000. A special appropriation of $2,500 a year was made to the lunacy commission for the purpose of prevention and after-care in connection with the Mental Hygiene Committee.

Doctors Discuss Press.—Medical and newspaper men met April 7 to discuss a plan for closer cooperation between the medical profession and the newspapers of the city. Physicians gave their views of what they called the exploiting of the ills of private patients, of garbling the accounts of private operations, of distorting and sensationalizing important but intricate discoveries and inventions, of getting back-door news from hospitals and of giving undue publicity to the deeds of certain physicians. It was suggested that the unmeasured power of the newspapers as public educators had been almost wholly neglected by the physicians and that means should be brought about to utilize this power for the welfare of the people of the city. An agreement was approved that a definite method of cooperation between the two professions be formed and a central authority established to assist actively the newspapers in getting accurate and educative information before the public.

MASSACHUSETTS

Small-Pox in Boston.—The Spanish steamer *Inez*, arriving from Barcelona, April 1, was held in quarantine on account of a case of small-pox in the crew.

College Physician at Harvard.—Freshmen at Harvard University hereafter will be under the supervision of a physician, will undergo periodical physical examinations, and will receive advice as to the best means of retaining their physical vigor.

Cooperative Suburban Board of Health.—The towns of Wellesley, Belmont, Framingham, Weston, Needham, Melrose, Winchester and Canton have completed the first year of their health work under a cooperative system. Service has been rendered by the Cooperative Suburban Board of Health, with laboratories and headquarters at Wellesley Hills, under the administrative management of Robert N. Hoyt. The total cost of the service for the eight towns during the year was $6.300, and has been so successful and economical that the service is to be continued.

Personal.—Dr. John E. McGrath, Hudson, has been appointed medical examiner of Middlesex County, vice Dr. Eugene G. Hoitt, removed from the state; Dr. Edward J. Mahoney, Springfield, medical examiner for the second Hampton district, vice Dr. Simon J. Russell, Springfield, resigned, and Dr. John J. Kelly, Marlboro, associate physician of Middlesex County, vice Dr. John E. McGrath, Hudson, promoted. ——Drs. Hugh Williams, Hugh Cabot, Fred B. Lund and Harry H. Germain have been appointed consulting surgeons; George Van Ness Dearborn has been appointed consulting physician, and Dr. William E. Chenery, rhinologist and laryngologist of the Forsythe Dental Infirmary for Children, Boston.——Dr. John J. Dowling has been appointed a trustee of the Boston City Hospital.——Dr. William J. Brinkley of the Haymarket Square Relief Hospital, has been granted a six-months' leave of absence to study hospitals abroad, and sailed from Boston, April 9.——Dr. Hugh Cabot has become one of the owners of the Boston *Journal*.——Dr. Howard Hamblen has been appointed a school committeeman of Maynard.

NEW YORK

New Editor of Bulletin.—Dr. Fred M. Meader has been elected editor of the *Bulletin* of the Syracuse Bureau of Health, the first number of which is to appear this month.

Medical Examination of Employees.—The Public Health Committee of the Chamber of Commerce of Rochester voted, March 21, to ask the trustees of the chamber to urge manufacturers to adopt the medical inspection of employees in their factories.

New Club House.—Physicians of Rochester are planning to purchase, for about $25,000, a building to be used as a club house. The associations which are fostering this enterprise are the Monroe County Medical Society, the Rochester Pathological Society, the Rochester Academy of Medicine, the Rochester Hospital Medical Society, the Rochester Homeopathic Medical Society, the Rochester Hahnemann Medical Society and the Blackwell Medical Society. Dr. William B. Jones is president, and Dr. David B. Jewett secretary of the temporary executive committee, which is in charge of the matter on hand.

New York City

Typhus Suspects Escape Quarantine.—Fourteen steerage passengers said to have been exposed to typhus infection on the *Cameronia*, are said to have been accidentally released from quarantine without inspection, and to have left for the interior.

Two More Small-Pox Cases.—Two more cases of small-pox have recently come to light, making in all six cases that have occurred in this city during the past month. The finding of these last two cases had led Dr. Sigismund S. Goldwater to reiterate his warnings urging vaccination on all.

In Memory of Dr. Le Fevre.—The students and members of the faculty of New York University and Bellevue Medical College held a memorial service in honor of Dr. Egbert Le Fevre on April 5. Addresses were made by Drs. George Alexander, Elmer Ellsworth Brown, Abram A. Smith, George D. Stewart, Edward D. Fisher and Prof. John A. Mandel. Resolutions were passed in recognition of the high esteem in which Dr. Le Fevre was held.

Prominent Foreign Surgeons Arrive.—The *Imperator* which arrived April 9, had on board forty-nine prominent surgeons who came to attend the International Congress on Surgery in this city. Among these were Professor Sonnenburg, Berlin; Prof. Ludwig Rehn, Frankfort-on-the-Main; Prof. H. Kümmel, Hamburg; Dr. Hans Schlange, Hannover; Dr. Bergmann, the surgeon of Emperor Frederick; Dr. Charles H. A. Fairbank, London; Dr. Oscar Bloch, Copenhagen, and Dr. Maurice Robineau, Paris.

Club Entertains Physicians.—The University Club of Brooklyn set apart the evening of April 11 as "Physicians' Night." Many prominent members of the profession in New York and Brooklyn were present as well as a number of visiting surgeons from abroad and from other cities. The guests of the evening included Dr. Charles H. Mayo and Dr. William J. Mayo, Rochester, Minn.; Dr. Alexis Carrel, New York; Prof. Henri Hartmann, Paris, France; Dr. John B. Murphy, Chicago; Dr. Lewis S. Pilcher, Dr. J. Richard Kevin, Brooklyn, and the Rev. Nehemiah Boynton.

Personal.—Dr. Joseph M. Creamer of Riverside Hospital, Dr. William T. Jenkins of Willard Parker Hospital and Dr. Cyrus J. Strong have resigned from the Board of Health. Dr. Jenkins was formerly health commissioner and health officer of the port.——Dr. Haven Emerson has been appointed sanitary superintendent and deputy health commissioner at a salary of $5,000 per annum.——Dr. Milton Schaie, first assistant surgeon at the Montefiore Home Country Sanatorium, Bedford Hills, has resigned, to become medical director of the Jewish Home for Chronic Invalids and Consumptives, St. Louis, Mo.

The Cancer Campaign.—The American Society for the Control of Cancer held a meeting at the New York Academy of Medicine on the evening of April 10, which was presided over by Dr. Clement Cleveland, the vice-president of the organization. The meeting was addressed by Dr. Cleveland, Dr. William J. Mayo of Rochester, Minn., and Dr. Francis Carter Wood of the Crocker Research Laboratory. The society held a third meeting on the morning of April 11. It is announced that $7,000 has been raised to carry on the work but that $3,000 more is needed to meet the requirements of the campaign up to Jan. 1, 1915. The society has a membership of 2,000.

Results of Tuberculosis Campaign.—The committee on prevention of tuberculosis of the Charity Organization Society has issued a report of its work during the past three years. This report regards as its most important and far reaching work the campaign to secure additional tuberculosis hospitals. It is stated that there are only 2,051 hospital beds, though the records of the Health Department show some 40,000 known consumptives, large numbers of whom are in need of immediate

hospital treatment. Of the 11,000 patients treated in the city's tuberculosis hospitals each year 45 per cent. have to be kept waiting before they gain admission. As a result of this campaign $2,000,000 was appropriated by the city for the erection of additional hospitals, which will add 1,300 additional beds. The committee has done much work among schoolchildren, establishing fresh-air classes and providing better ventilation. Other features of the campaign have been lectures, moving picture demonstrations, the traveling tuberculosis exhibit and the wide distribution of instructive leaflets and pamphlets. It is further stated that the death rate of Greater New York from pulmonary tuberculosis has fallen from 2.25 in 1898 to 1.66 in 1912.

Advise Change in Autopsy Law.—The hospital investigating committee of the Board of Estimate in a report just made to the Board of Aldermen recommends that the state law regarding autopsies be changed so as to enable hospitals to perform a much larger percentage of autopsies than is permitted at present. The proposed law would allow hospitals to perform autopsies in cases in which there is no objection within forty-eight hours from husband, wife or next of kin. Bellevue Hospital has built and equipped the finest pathologic building in the United States and is provided with every modern facility for performing autopsies and following up such autopsies by experimental work, but it is practically unable to use this plant because of the inability to secure permission to perform autopsies. It was shown that during the period of investigation 47.7 per cent. of the autopsies did not confirm the clinical diagnosis. The conclusions drawn from this large percentage of errors in clinical diagnosis were not that the findings of the attending physicians of Bellevue were carelessly made, but rather that too great reliance was placed on the inexperienced house physician and interns and also that the current knowledge necessary to make clinical diagnoses, which should approach accuracy, was insufficient.

OHIO

Health Conservation Problems.—March 30, Dr. E. F. McCampbell, secretary State Board of Health, addressed the members of the Commercial Club of Springfield, on the subject of "Health Conservation Problems in Ohio."

Public Health Exhibit.—The tentative schedule of the Public Health Exhibit of the Ohio State Board of Health is as follows: Salem, April 6-11; Alliance, April 15-21; Bellaire, April 25-May 1; Columbus, May 5-7; London, May 11-16; Springfield, May 20-26; Xenia, June 1-6, and Hamilton, June 10-16.

Personal.—Dr. William B. Van Note, Lima, sails for Europe May 1.——Dr. and Mrs. Ralph A. Bunn, Oakwood, Dayton, sailed from New York for the Mediterranean, April 4.——Dr. Edward J. Wheatley, National Military Home, has assumed his new duties as surgeon of the Soldiers' Home Hospital, Danville, Ill.

Prohibition of Common Drinking Cup and Common Towel.—The State Board of Health, at a meeting held in Cincinnati, March 19, amended its regulations regarding the use of the common drinking cup and common towel, to include a number of places, such as telephone exchanges, telegraph offices, etc., which had not been previously mentioned.

Clinicians Elect Officers.—At the annual meeting of the Ohio State Clinical Association, held in Toledo, April 6 and 7, the following officers were elected: president, Dr. Charles C. Bonifield, Cincinnati; vice-presidents, Drs. Frank Winders, Columbus, and Mark D. Stevenson, Akron; secretary-treasurer, Dr. Frank E. Fee, Cincinnati; and trustee, Dr. George M. Todd, Toledo.

Medical Fakes and Fakers.—The Department of Physiology, Ohio State University, is presenting a series of lectures open to all students of the university, on Thursday afternoons. The lecturer on April 2, was Dr. George H. Matson, Columbus, secretary of the State Board of Medical Registration, and his topic was "Medical Fakes and Fakers." The lecturer praised the campaign of exposure of medical fakes and fakers.

Municipal Clinics in Dayton.—Health Commissioner Light announces that free dispensaries for the worthy poor will be conducted by the health department in the Cappel Building, under the supervision of Miss Elizabeth Fox; Mondays, Wednesdays and Fridays baby clinics will be held; Tuesdays and Thursdays general clinics and on Saturdays a tuberculosis clinic. In addition to these, daily clinics for diseases of the eye, ear, nose and throat will be held at St. Elizabeth's Hospital, and on Tuesdays, Thursdays and Saturdays at the Miami Valley Hospital.

Why Not a Public Health Exhibit?—The Sandusky Board of Health recently requested the city council to put aside a certain sum of money for a Public Health Exhibit. This the council refused to do, giving as an excuse the fact that the duties of a board of health were not educational, and that the board would be better occupied in cleaning up the city than in attempting to place an exhibit before the people. A number of physicians and the Board of Health of Sandusky were so much impressed by the Public Health Exhibit of the State Board of Health that they decided to continue the campaign of education along public health lines by means of a local exhibit. It was planned to have the engineer in charge of the filtration plant show how the system operates, and give a practical demonstration of the examination of water, and many other features of great local interest and importance were to be added to the exhibit. It is to be regretted that an intelligent campaign of this character should meet with failure.

Typhoid Outbreak at Circleville.—An outbreak of typhoid fever in Circleville during the months of January and February, 1914, attracted considerable attention. In all forty-five cases were reported and two deaths occurred. An epidemiologic investigation showed that the infection was due to a temporary pollution of the water-supply in all but a few cases, which were due to contact. The water-supply is drawn from an infiltration gallery in the valley of Big Darby Creek, and laboratory examinations have shown it to be free from pollution on many occasions. Investigation by the Division of Sanitary Engineering of the Ohio State Board of Health revealed the fact that a connection to the distributing system of the city existed, by means of which the American Strawboard Company was furnished city water for fire protection. The regular water-supply of this company is drawn from the Scioto River, which receives all sewage from the city of Columbus at a point twenty-five miles above the intake and is otherwise seriously polluted. The polluted river water was able to leak through the check valve separating the two supplies, and contaminated the general water-supply. Such contamination can reach only those mains supplying the southern part of Circleville, and it was to this part of the city that the outbreak was confined, only one case being reported from any other part of the city. Steps have been taken to prevent the recurrence of such an event in the future and its occurrence should prove a warning to other municipalities in which such a condition of affairs is allowed to exist. An outbreak of typhoid fever in Springfield in 1911 was traced to a similar connection.

PENNSYLVANIA

Medical Scholarship Founded by Women's Clubs.—Two medical scholarships for women, to be known as The Congress of Women's Clubs of Western Pennsylvania Medical Scholarships, have been endowed by gifts and pledges, and have been formally presented to the University of Pittsburgh.

Lecture on Typhus Fever.—Surg. John F. Anderson, U. S. P. H. S., director of the Hygienic Laboratory, Washington, D. C., lectured before the Biologic Society of the University of Pittsburgh recently on "Our Present Knowledge of the Etiology and Distribution of Typhus Fever."

Floating Hospital.—The Pittsburgh Academy of Science and Art has announced plans for a floating hospital for tuberculosis patients, which will have a full crew of doctors and nurses. It will be used especially for patients awaiting admission to the state and county hospitals. Considerable money has been subscribed, and moving picture shows throughout Allegheny County are to be asked to set aside a day when pictures showing ravages of the white plague will be shown, the proceeds to go toward the maintenance of the hospital.

Philadelphia

Personal.—Dr. Arthur Dare has just returned from a four months' trip to the Orient.——Dr. Samuel S. Woody has been reappointed chief resident physician to the Philadelphia Hospital for Contagious Diseases.

Medical Lecture.—The annual address of the Philadelphia Pathological Society will be delivered at the College of Physicians, Twenty-Second and Chestnut Streets, by Dr. Richard P. Strong of Harvard University, on "Bubonic Plague."

Memorial Meeting.—At a meeting of the College of Physicians of Philadelphia held April 1, Dr. Edward B. Meigs read a memoir of the late Dr. Arthur V. Meigs, and Dr. Henry W. Stelwagon a memorial of the late Dr. Louis A. Dühring.

Medical Examiners Meet.—The Field Medical Examiners of Philadelphia life insurance companies held their monthly meeting and dinner at the Hotel Walton, April 7. Addresses were made by Drs. Elmer B. Kyle, Thomas H. Bradford, Foster K. Collins and Ernest W. Kelsey.

Physicians Honor Railroad Officials.—The Medical Club of Philadelphia gave a reception April 17, in honor of Mr. A. T. Dice, vice-president and general manager of the Philadelphia & Reading Railway; Mr. S. C. Long, general manager of the Pennsylvania Railroad, and Mr. George H. Campbell, assistant to the president of the Baltimore & Ohio Railroad.

Medallion Presented to Hospital.—A bronze medallion of the late Dr. John S. Musser was unveiled in the University Hospital April 15. The medallion is in low relief, and was designed by Dr. R. Tait McKenzie. The medallion, the gift of the Social Service Department, was placed in the wall of the corridor to the left of the entrance. Dr. George E. deSchweinitz made the presentation address.

German Measles Epidemic.—German measles, which last year afflicted more than ten thousand children in this city, is again epidemic. Last month 1,791 cases were reported to the Bureau of Health, an increase from 854 in February, and 414 in January. The Department of Health will make vigorous efforts to check the spread of the disease by requiring as strict a quarantine as the law provides.

Examinations.—The Civil Service Commission will hold an examination for the position of chief resident physician, Philadelphia General Hospital; salary, $4,000 per year. No provisional appointment will be made to this position.——The Civil Service Commission will hold an examination April 30, 1914, for assistant chief medical inspector, Bureau of Health, Department of Health and Charities; salary, $2,400 per year.

Medical College Society Banquet.—The James M. Anders Medical Society of the Medico-Chirurgical College held its twenty-first annual banquet April 3, at which also was celebrated the twenty-fifth anniversary of Professor Anders' association with the college. The annual address was made by Prof. Hobert A. Hare of the Jefferson Medical College. Among other speakers were Drs. David Riesman, Ernest LaPlace, and James M. Anders.

City's Baby-Saving Plans.—On March 30 a meeting was held in the mayor's office and plans were proposed for the organization of the Division of Child Hygiene. Of the 125 organizations in this city interested in children's welfare, 89 have been enrolled as members of the Babies' Welfare Association in Philadelphia. This association intends not only to prevent duplication of the various lines of work, but will enable the different organizations to formulate a program of action to be carried out in Philadelphia during the year, thus to work out the welfare of babies from a standpoint of civic betterment. Each institution will know just what other institutions are doing, thus eliminating wasted efforts.

Dealers Oppose Pasteurization of Milk.—A meeting was held in City Hall, April 2, by the Board of Health and the milk men of the city to confer on the revised rules on the sale of milk. President John A. Vogelson of the Health Board conducted the meeting. The small dealers are fighting the rule for the pasteurization of milk, and read letters from physicians in favor of raw milk. The new rules, which go into effect July 1, also provide that all persons handling milk shall be subject to examination by the Health Department to detect anyone having a communicable disease. Every can of milk should have a label stating its contents and from what farm it came. The score card system will also be provided.

TENNESSEE

Personal.—Drs. James H. Atlee and James A. Smith, Chattanooga, have gone abroad.——The offices of Drs. W. M. Wilson and James E. Adkisson in the W. J. Birdsong Building, Medina, were destroyed by fire recently.——Dr. Benjamin D. Caldwell, Milan, while making a professional call was struck and seriously injured by a freight train which demolished his buggy and threw him on the tracks.

New Hospital Staff.—The following is the staff of the new Baroness Erlanger Hospital, Chattanooga: chief of the summer staff, Dr. John S. Dye; surgical department—Drs. Edwin B. Anderson, John B. Haskins and Daniel N. Williams; medical department—Drs. Thomas E. Abernathy, Martin A. Meacham, and William E. Anderson; obstetrical department—Dr. Julius C. Brooks; genito-urinary department—Dr. G. Victor Williams; eye, ear, nose and throat department—Drs. Benjamin F. Travis and J. McChesney Hogshead; children's disease department—Dr. Jose M. Selden, and superintendent of the hospital, Dr. W. E. Raht.

State Society Meeting.—The eighty-first annual meeting of the Tennessee State Medical Association was held in Memphis, April 8-9. The following officers were elected: president, Dr. Samuel M. Miller, Knoxville; vice-presidents, for middle Tennessee, Dr. Hilliard Wood, Nashville, east Tennessee, Dr. John M. Clack, Rockwood, west Tennessee, Dr. Samuel T. Parker, Lexington; secretary, Dr. Olin West, Nashville; treasurer, Dr. Charles N. Cowden, Nashville; trustee, Dr. George E. Pettey, Memphis; delegates to the American Medical Association, Drs. Perry Bromberg, Nashville, and Edward C. Ellett, Memphis; alternates, Drs. Andrew F. Richards, Sparta, and William T. Black, Memphis; councillors, first district, Dr. Claude P. Fox, Greenville; second district, Dr. Andrew F. Richards, Sparta; fifth district, Dr. Frank B. Reago, Shelbyville; seventh district, Dr. Luther E. Wheat, Brick Church, and ninth district, Dr. Tazwell B. Wingo, Martin.

GENERAL

Pediatric Society Meeting.—The next meeting of the American Pediatric Society will be held at the Red Lion Inn, Stockbridge, Mass., May 26-28.

Health Conference.—A health conference of city officials of every municipality of northern Indiana and southern Michigan convened at South Bend, Ind., April 15.

Railroad Hygiene.—The Pennsylvania System has made more rigid the rules governing the inspection of the dining, buffet and kitchen cars of that line, as well as the examinations for communicable diseases of its employees in that branch of service.

Child Welfare Convention.—The third International Child Welfare Convention is to be held in Washington, D. C., May 22-27, under the auspices of the National Congress of Mothers and the Parent-Teacher Association. Among the topics to be discussed will be child welfare as regards home, school, church and state.

Surgeons Elect Officers.—At the annual meeting of the American Surgical Association in New York City, April 8-11, Rochester, Minn., was selected as the next place of meeting, and the following officers were elected: president, Dr. George E. Armstrong, Montreal; vice-presidents, Drs. Lewis S. Pilcher, Brooklyn, and Frank E. Bunts, Cleveland; secretary, Dr. Robert G. Le Conte, Philadelphia; treasurer, Dr. Charles L. Gibson, New York City; recorder, Dr. Archibald Maclaren, St. Paul; councilors, Drs. William J. Mayo, Rochester, Minn., Arpad G. Gerster, New York City, and Charles A. Powers, Denver.

Appointments in Canal Zone.—Passed Asst. Surg. Marshall Guthrie, U. S. P. H. S., has been appointed chief quarantine officer for the Panama Canal Zone.——Lieut.-Col. George D. Deshon, M.C., U. S. Army, detailed as superintendent of the Ancon hospitals, has been given permission to report for duty on May 1, instead of April 1, as originally ordered.——Senior Surg. Joseph H. White, U. S. P. H. S., now stationed in New Orleans, has been given a leave of absence for one year. He will take up for the Rockefeller Commission, the important work of the eradication of hookworm throughout Central and South America.——Dr. D. W. Herman has been appointed medical officer of the Canal Zone, and has arrived at Colon.

Bequests and Donations.—The following bequests and donations have recently been announced:

For the establishment of a Home for Convalescents and Incurables at Dorchester, Mass., 40 acres of land and $50,000 by the will of Frank Wood, Boston, Mass.

Mount Sinai Hospital, New York City, $100,000; St. Luke's, German, Manhattan Eye and Ear and Lincoln hospitals each $25,000, by the will of Benjamin Altman.

Columbia Research Work on the causes and cure of cancer, $5,000; Home for Aged and Infirm Hebrews, $2,000; St. Rose's Home for Incurable Cancer, Montefiore Home and Mount Sinai Alumnae Association, each $1,000, by the will of Leonidas A. von Prang.

McGill University, Montreal, $20,000, and Samaritan Hospital for Women, $1,000, by the will of Miss Mary A. Cramp, Montreal.

Mount Sinai Hospital, New York City, New York Society for the Ruptured and Crippled; Home for Aged and Infirm Hebrews; Montefiore Home and four other philanthropic institutions a share in an estate of $87,729, by the will of Lewis Sampson Levy.

FOREIGN

Renvers Endowment.—The friends and pupils of the late professor of internal medicine at the University of Berlin, R. von Renvers, have presented the municipal authorities of Berlin with an endowment fund of $4,225 (17,000 marks) as a memorial.

International Congress for Neurology and Psychiatry.—Dr. L. Schnyder of Berne, Monbijoustrasse 31, states that all announcements of articles designed for this congress must be in his hands by July 1. The meeting is to be held at Berne, Switzerland, Sept. 7-12, 1914.

More Plague in Havana.—It is reported that four more cases of bubonic plague have developed in the infected zone in Havana. The sanitary department has now depopulated three entire blocks of the zone, removing those individuals who are unprovided for to the Trisconia Quarantine Station, to be under observation for a period of ten days.

CANADA

Health Officers to Meet.—The third annual conference of the Ontario Health Officers' Association will be held in Convocation Hall, University of Toronto, May 7 and 8.

Board Will Issue Bulletins.—The Victoria (B. C.) Board of Health will commence the issuing of quarterly bulletins. They will be distributed to each household throughout the city. The health department is to receive wider powers.

Manitoba Medical College News.—The Manitoba Medical College will begin to issue a medical college journal next August.——The new addition to the Manitoba Medical College which has just been opened cost $50,000. The total value of the present college is estimated at $125,000 and the site at $200,000.

Hospital News.—The King George Isolation Municipal Hospital is now in working order in Winnipeg. It cost $400,000. There are 176 beds and the accommodation can be extended to 200 in case of need. Dr. A. B. Alexander is superintendent with Dr. Alvin T Mathers as assistant. The city will erect a residence for the superintendent.——The Hon. Dr. Young of British Columbia has introduced a bill into the legislature to amend the Act of the Royal Jubilee Hospital, Victoria. It will accord to medical practitioners the right to sit on the board of governors, which under the present act is specifically denied.——At Onoway, near Edmonton, Alta., a country hospital has been established to be known as the St. Barnabas Nursing Home.——On its last year's operations the Toronto General Hospital had a deficit of $70,000.——Dr. J. Alexander Hutchison has been appointed senior surgeon of the Montreal General Hospital in succession to Dr. Francis J. Shepherd, resigned. The hospital faces a deficit of $67,014 as reported at the ninety second annual meeting held recently.

Personal.—Dr. Walter A. Wilkins, Montreal, has left for Germany.——Dr. William R. Jaffray of the provincial board of health of Ontario at Kingston, has been appointed assistant physician at the Post-Graduate Hospital, New York.——Dr. S. M. Asselstine, Marlbank, Ont., has been appointed lecturer in pharmacology and therapeutics at Queen's University, Kingston.——Dr. Duncan MacLennan, Toronto, will sail for Europe the last week in April.——Dr. J. J. Middleton has returned to Toronto after six months' graduate work in London, Edinburgh and Dublin.——Dr. W. E. Deeks, formerly lecturer in zoology and demonstrator of anatomy in McGill University, Montreal, but for several years chief physician in the Ancon Hospital at Panama, is on his way to Europe for a holiday.——Dr. Walter Bapty, Victoria, B. C., has been appointed secretary to the British Columbia Board of Health, Dr. Charles J. Fagan having retired.——Dr. Frank F. Wesbrook, Vancouver, president of the University of British Columbia, has returned from Europe and the United States where he has been securing a strong staff for the university. The announcement of the appointments is to be made in the immediate future.

LONDON LETTER

LONDON, March 27, 1914.

Inauguration of an Ambulance System in London

Strange as it may appear, London has been without any centralized ambulance system up to the present. In cases of accident the police remove injured persons to the hospital by means of hand ambulances. The subject has been under the consideration of the London County Council for some time, but motives of economy have prevented the adoption of any scheme. In the months of September, October and November, 1913, there were 4,434 accidents and 1,309 cases of sudden illness in which the assistance of the police was required for conveying the patients to the hospital. This does not take into account patients conveyed by the police to local doctors, of whom no statistics are available, or accidents in factories and workshops, which are estimated to be from eight to ten thousand a year. The council has now decided on an ambulance system sufficient to provide for 27,770 cases of accidents and illness a year. The service will be available for cases of accident and illness in the streets and for accidents in factories and private premises, but not for the conveyance of sick persons from private houses. The scheme will be under the control of the fire department, subject to the advice on medical questions of the health officer. Six stations will be created, three north and three south of the Thames. The motive power will be gasoline, as electrically propelled ambulances would not be suitable where the neighborhood is hilly or the distance is long. After consideration of various types of stretcher appliances, the collapsible doolee as used in Glasgow—canvas supported by removable poles—was adopted. Each amoulance will also carry a plain board stretcher for cases such as fractured pelvis in which a collapsible stretcher might cause harm. In the ambulance itself there will be a spring mattress covered with air beds. The annual expenditure for maintenance is estimated at $50,000.

The Falling Birth-Rate in Scotland

Scotland exhibits the same phenomenon of a falling birth-rate as has been reported from time to time in THE JOURNAL for England. The rate for 1913 was 25.5 per thousand, the lowest yet recorded, being 28 per cent. less than the rate for 1876. The excess of births over deaths was 47,476, being 2,903 less than in the previous year, 4,487 less than the mean of the natural increases of the preceding five years, and 6,199 less than the mean of those of the preceding ten years.

Surgeon-General Gorgas in London

Surgeon-General Gorgas has returned to this country from South Africa, where he went at the invitation of the Johannesburg Chamber of Mines and the British South Africa Company, accompanied by Dr. Darling (chief of the Research Laboratory of the Panama Canal Commission) and Major Noble (general inspector of the Sanitary Department of the Panama Canal Commission), to examine the sanitary conditions in the mines in view of the prevalence of pneumonia and tuberculosis and to inspect the valleys of southern Rhodesia. At the Royal Society of Medicine, Gorgas lectured on the measures adopted in combating malaria and yellow fever in Panama. He and his colleagues were also entertained at a complimentary dinner over which presided Sir Thomas Barlow, president of the Royal College of Physicians, and which was attended by a distinguished company of physicians and others, including the Archbishop of Canterbury, the Lord Chancellor and the American ambassador.

Cooperation of the Government with the American Health Commission

The government is cooperating with the American commission appointed to institute a campaign against ankylostomiasis and other tropical diseases. Mr. Wickliffe Rose, the director of the commission, visited several of our West Indian islands at the end of last year, and has made satisfactory arrangements with the local authorities there for a similar campaign. For the last week Mr. Rose has been in London conferring with a special committee appointed by the colonial office which, it is proposed, will work in conjunction with the American commission. Mr. Rose, accompanied by Dr. Sandwith of the London School of Tropical Medicine, has left London for Egypt, Ceylon, the Federated Malay States and the Philippine Islands, where he hopes to carry out similar work. The London School of Tropical Medicine, when asked to furnish a man to accompany Mr. Rose on his mission, suggested Dr. Sandwith, its senior physician and lecturer, whose experience of this disease is unrivaled. It is also probable that future workers in this new field, as far as the British Empire is concerned, will have to undergo a special course of training at the London School of Tropical Medicine. At present Dr. R. T. Leiper of the London School of Tropical Medicine is in China studying another tropical disease, bilharziasis, and it is understood that he will also investigate the ravages of ankylostomiasis among the coolies on the tea estates. Dr. Leiper has the active assistance of the admiralty and the colonial office in his research work.

Royal Commission on Venereal Diseases

At the twenty-second meeting of the Royal Commission on Venereal Diseases, evidence was given by Mr. D'Arcy Power, surgeon and lecturer on surgery at St. Bartholomew's Hospital, and one of the representatives before the Commission of the Royal College of Surgeons and the Royal Society of Medicine. He looked on gonorrhea as the more serious dis-

ease for the individual and syphilis for the race. In general surgery the effects of gonorrhea were far-reaching, and it was an error to teach that it was a local and curable disease. Syphilis was more dangerous to the state than to the individual. The expectation of life was materially shortened. The immediate danger extended to the second generation, and the vitality of the stock seemed diminished for several generations. Syphilis gave surgery a large amount of work. It predisposed, Mr. Power thought, to cancer and tuberculosis. A diminution in the incidence of syphilis would best be brought about by better instruction of the medical student; each general hospital ought to establish a special department under the control of the senior medical officer. The department should be chiefly an outpatient clinic and should be held in the afternoon or in the evening. A few beds might be provided, but the essence of successful treatment in syphilis was early diagnosis and prolonged attendance. The department should be thoroughly equipped with a sufficient staff of pathologists with the necessary remedies. The expense would no doubt be considerable, but the state would be more than repaid. The establishment and use of such departments would gradually educate the public to appreciate the danger and thereby diminish the risk. Mr. Power did not think that any organized attempt to educate the public with regard to venereal diseases was desirable; he would rather trust to the gradual growth of education through the medical profession. He was not in favor of notification of venereal diseases, at any rate for the present.

PARIS LETTER

PARIS, March 27, 1914.

Investigation of the Sanitary Conditions of the Army

About a month ago, the Chamber of Deputies, after questions on the sanitary condition of the army, ordered an investigation into the condition of the barracks, the causes of morbidity and mortality and the hygienic measures required, giving full power of investigation to the committee of hygiene, the chairman of which is Dr. Lachaud, deputy from the Department of la Corrèze. The committee immediately began work and has now finished. It gave particular attention to the food of the army. After making a comparison of the food in the various European armies, Dr. Lachaud established that, after Great Britain, France is the country in which the soldiers are best nourished. On the other hand, it appears that owing to insufficient clothing, especially shoes, diseases have often resulted from exposure. Bedding is also insufficient. The greater number of avoidable diseases which have occurred during the past winter might have been prevented if the superior officers had exercised a more careful oversight of the naturally improvident soldier. In short, it appears to the commission that the high morbidity and mortality in the army are due to the classes of recruits recently added, to the excessive congestion of the troops in the barracks, which should be put in more sanitary condition, and to the unsatisfactory footwear of the men.

Old Age Relief

The expense of assistance given to the aged, infirm and incurable increases each year, as shown by the following figures:

		Francs
1908	$16,014,246.80	(80,071,234)
1909	18,010,810.60	(90,054,053)
1910	18,641,625.60	(93,208,128)
1911	19,179,127.80	(95,895,639)
1912	20,954,703.60	(104,773,518)

Abuses are manifest, and the central committee protests against the facility with which local authorities are led to give aid. The municipal councils sometimes have restored the names of those whom the central committee had ordered removed from the list of those entitled to relief, or have erased names which the central committee had ordered added. The central committee fears that similar abuses will attend the administration of the new law of aid for numerous families.

Bacillus-Carriers and Amebic Dysentery

March 24, Dean Landouzy of the Faculté de médecine de Paris drew the attention of the Académie de médecine to the importation into Europe, especially France, of amebic dysentery by bacillus-carriers. He reported the case of a patient who died of a large abscess of the liver due to amebic dysentery which was unrecognized, partly because the symptoms were obscure and partly because the patient had never left the north of France. The patient, therefore, had been infected in France in some as yet unknown manner. Other cases of the same kind have already been reported in France in the last ten years, and there is no doubt that amebic dysentery is being imported into our country. Presumably, the number of cases of amebic dysentery contracted in France will increase in proportion to the number of returned colonial troops from Africa and Asia. To lessen the danger, Landouzy suggests that, on their return to the barracks in France, the men should be examined repeatedly in order to detect germ-carriers. Professor Vaillard, while recognizing the danger of the constant introduction of convalescent or half-cured dysentery patients, believes that the danger is not so great as might be feared. Many infected men return from colonial service to France, and still there is no great increase in amebiasis contracted in this country. Apparently, the climatic and hygienic conditions are not favorable to the diffusion of the ameba.

Peritoneal Congestion of Appendicular Origin

At the same session of the Académie de médecine, Dr. Mignon, medical inspector of the military hygiene service, made an interesting report on a dramatic complication of appendicitis which he observed three times and which consists of diffuse peritoneal lesions which cause extremely sharp abdominal pain with light fever, peritoneal facies, greenish vomiting, tympanism, etc. In presence of this striking syndrome, a peritonitis might be suspected, except for two symptoms, the slight rise of temperature (from 38 to 39 C., or from 100.4 to 102.2 F.) and the regularity of the pulse, which does not exceed 90 or 100. These symptoms last only forty-eight hours or three days at most, and then all recede. The treatment of this peritoneal congestion consists in the application of ice-bags to the abdomen without surgical intervention, which might result fatally. Operation is indicated, however, some weeks after the disappearance of the symptoms.

The Income Tax and the Liberal Professions

The Chamber of Deputies and the Senate are at present disputing over the subject of the income tax, which has just been adopted by the Chamber. This fiscal reform has brought numerous protests from members of the liberal professions. The lawyers were the first to protest, arguing that merchants and manufacturers were taxed only on their net profits, and that the principal grew greater and greater as the annual profits increased; that, on the contrary, a lawyer's practice had no commercial value, that the income generally decreases with the advancing age of the incumbent, and that the fees form a gross profit, from which it is only fair to deduct professional expenses, rent, etc. The Syndicat des médecins du département du Rhône, presenting arguments of the same sort and emphasizing the steadily growing demands on physicians for free services and the application of social laws, unanimously passed a motion presented by its president, J. Teissier. The syndicat asks that (1) in deciding the professional income of physicians, the total submitted for taxation be diminished by those expenses peculiar to the profession, and that (2) their quota shall be less than that fixed for business men and merchants, since the physician accumulates nothing with his income, or annual profits, which can be compared to the principal which a commercial enterprise or a manufacture builds up, but, on the contrary, sees his profits diminish as he is weakened by age, and disappear the day he is no longer able to practice.

Internship and Foreign Students

Following a request made by a delegation of physicians and surgeons of the hospitals of Paris (THE JOURNAL, March 21, 1914, p. 946), the minister of the interior has just decided that the internships in the hospitals shall remain accessible to foreign students.

Death of Dr. Launois

Dr. Pierre-Emile Launois, physician at the Lariboisière Hospital, and *agrégé* professor at the Faculté de médecine de Paris, has just died, aged 58 years.

BERLIN LETTER

BERLIN, March 27, 1914.

Personal

Professor Ludloff of Breslau has been offered the position of director of the University Orthopedic Clinic to succeed the late Professor Joachimstal. As Ludloff recently was called to Frankfort-on-the-Main, it is not yet known which call he will accept.

March 13, Professor Aufrecht, the former director of the department of internal medicine at the Old City Hospital at Magdeburg, celebrated his seventieth birthday. Although he never worked at a university institute, still he has published a number of monographs that are worthy of notice. Of these his work on Pneumonia in Nothnagel's Encyclopedia is the best known.

Sickness Insurance and Contracts with Physicians

The carrying into effect of the Berlin agreement, that is, the agreement entered into under the auspices of the government between the Leipsic League and the authorities of the Krankenkassen, has made but slow progress in the last few months. (It was described in THE JOURNAL, March 28, 1914, p. 1039.) Peace has now been consummated in Breslau where previously the Krankenkassen officials had rejected, with peculiar obstinacy, all the advances of physicians and the representatives of the government. Meanwhile the number of places open to insurance physicians which are still under the ban of the Leipsic League is considerable. By this is meant the advertised list of places which the league warns physicians against accepting without consulting with the league officials. The number according to the last advertised list is 273.

Balneologic Congress

The thirty-fifth annual meeting of physicians in Germany specially interested in balneology was held at Hamburg in March.

BACILLI CARRIERS IN HEALTH RESORTS

Among the addresses of general practical importance was one by Ritter of Geesthacht on tuberculosis and influenza-bacilli carriers in public health resorts and sanatoriums. He stated that the influenza-bacilli carriers are more objectionable than the tuberculous, first because influenza itself is by no means an insignificant disease, but chiefly because other diseases, especially pulmonary tuberculosis, are very often started up into renewed activity under the influence of infection with influenza bacilli. To this must be added the facts that no appreciable immunity to influenza develops, and that numerous clinically healthy people are bearers of virulent influenza bacilli, especially in the upper air passages. In regard to tuberculosis, even if notification were strictly enforced, it would not be possible to distinguish the so-called open tuberculous, who are capable of communicating infection, so as to exclude them from health resorts for the non-tuberculous.

There remains no other measure but to limit as far as possible the danger of infection by instruction in hygiene, not only of the patients but particularly of those engaged in renting rooms and keeping boarders. In sanatoriums which are under the control of a single physician, this is possible, but it is more difficult in public health resorts. Here police regulations must be adopted with reference to the beds (washable coverings for the beds), the treatment of the expectoration (antispitting ordinance), the preservation and preparation of foodstuffs and the handling of dirty linen (to be transported only in washable sacks). It is especially to be desired and necessary that there should be supervision of the smaller boarding and lodging-houses, in which the sanitary conditions are often quite unsatisfactory. Public water works and sewerage naturally assist the sanitation of a health resort but they are not absolutely necessary. A disinfection apparatus and a trained disinfector should be available in every large health resort.

THE DESERT CLIMATE

The well-known superintendent of the sanatorium at St. Blasien, Professor Determann, gave his experience with reference to desert climates. The character of the desert climate is determined by the peculiar combination of the high temperature of the air with extreme dryness and bright sunlight. The evaporation through the skin is so great that one might speak of a greater metabolism of liquids in the skin which perhaps relieves the kidneys. The number of blood-corpuscles seems to be increased but the amount of hemoglobin is decreased. Important investigations of the blood plasma were made. There occurred a transference of all the processes of oxidation of the foodstuffs from the muscles to the skin. The desert climate is chiefly suitable for debilitated and elderly people with poor regulation of the heat in the skin but with healthy hearts, and also for rheumatic diseases of the muscles and joints, neuralgias, lancinating pains and for some forms of nephritis. In arteriosclerosis, caution should be used.

TREATMENT OF PULMONARY TUBERCULOSIS

Professor Brauer, director of the Eppendorf Hospital, spoke on the treatment of diseases of the lungs. He gave an account of his experience and that of his associates with the Friedmann remedy, which, he stated, in no way encouraged further trials. Citing the experience with Koch's tuberculin he repeatedly and expressly emphasized the grave responsibility which clinics and hospitals assume when they even seem to support the propaganda for a new remedy which has not received the support of a thorough experimental trial on animals.

Brauer then discussed the surgical treatment of various diseases of the lungs, especially severe cases of bronchiectasia, and showed by several cured patients and a large series of highly instructive Roentgen-ray pictures what fine results are often obtained by operative measures. In connection with this, however, he expressly emphasized the fact that the operation, in view of the danger of air embolism, is by no means harmless and should never be undertaken until after the most careful investigation of every factor which influences the condition.

CHRONIC KIDNEY DISEASE

Professor Volhard, director of the municipal hospital at Mannheim, discussed clinical experience and views with reference to Bright's disease. The speaker criticized the present-day nomenclature which hinders the understanding of the clinical forms of disease of the kidney, and proposed a classification and systematization of diseases of the kidney which seems to be equally satisfactory both to clinicians and to pathologists. In connection with this, he described the individual forms and their treatment, and especially called attention to the fact that the degree of insufficiency of the kidney depends on the amount of kidney tissue which remains capable of function. He also showed that acute diffuse glomerular nephritis possesses a great tendency to heal, and it is very important to secure the healing of nephritis in the earliest stage of the acute disease in order to prevent the development of a chronic nephritis that will lead to insufficiency of the kidney in the course of months, years or decades.

He further discussed the different forms of uremia. Only those forms should be regarded as genuine uremia which occur exclusively in cases of renal insufficiency and are characterized by azotemia, *i.e.*, a marked increase in the residual nitrogen in the blood. Cases of eclamptic uremia and their equivalents occur, on the other hand, without renal insufficiency and should be sharply distinguished on this account from genuine uremia. The same holds good for the pseudo-uremic transitory symptoms of renal sclerosis. In conclusion the speaker voiced the hope that it might be possible by timely discovery and supervision of benign hypertonic conditions to postpone the development of a severe degree of arteriosclerosis and to prevent the occurrence of the malignant form, *i.e.*, the combination of sclerosis with nephritis.

DIATHERMIA

Laqueur of Hamburg reported his experience in treatment with diathermy. After some general remarks on the theory, technic and apparatus of the method he discussed the therapeutic successes and failures of diathermy. Deserving of notice first of all is the analgesic action in acute joint diseases; this almost never fails, whatever the etiology. Diathermy has also a favorable action in chronic arthritis, neuritis, myalgia, epididymitis, prostatitis and paresthesias. No success was obtained in tabes, paralysis agitans or otosclerosis; moreover, in the treatment of diseases of the heart and blood-vessels as well as other diseases of the internal organs such as the lungs, the intestines or the liver, diathermy is of no great importance. On the other hand there is a future for it as a method of surgical treatment and for sensitizing before roentgenotherapy. Laqueur warns against unsuitable application and extending the indications too far.

VIENNA LETTER

VIENNA, March 25, 1914.

Neutralization of Health Resorts in Time of War

It is just fifty years since the present imperial councilor, Dr. Kisch of Marienbad, suggested that in time of war all health resorts should be declared neutral, and that this sentence should be added to the Convention of Geneva. In spite of the interest it had evoked when it was formulated for the first time, the idea fell into oblivion. Recently Kisch has once more taken up his old idea and explained in several letters to the press how much could be done if all wounded men and officers could be cared for in the Austrian health resorts. These alone could provide more than 100,000 beds for wounded soldiers. The Austrian foreign office has taken the matter up, and efforts will be made for the acceptance of this plan by all nations.

Sickness Insurance and Health of the Insured

The Union of the Krankenkassen of Vienna (Verband der Krankenkassen) which has 435,000 members, of whom 315,000 live in Vienna itself, reports that 12,063 members were unfit for work for more than three days during January. Tuberculosis was diagnosed in 963 cases, and other diseases of the air-passages in 1,834 patients except 533 cases of acute tonsillitis and 37 of pneumonia. Influenza was found in 703 patients, diseases of the circulatory system in 453, diseases of the alimentary canal in 690, and rheumatic affections in 1,059, while 1,971 accidental injuries were reported. During the month 279 members died, 101 deaths, or 38 per cent., being due to tuberculosis, 29 to other diseases of the air-passages, 43, or 15 per cent., to circulatory disorders, 24, or 9 per cent., to new growths, 5 to accidents and 14 to suicide. In comparison with the same period of the preceding year, a marked decrease in morbidity and mortality is notable, amounting to 20 per cent. in morbidity and 12 per cent. in mortality.

Proposed Fee for the Use of Outpatient Departments

The constant lack of funds under which our state hospitals are laboring owing chiefly to red tape as well as lack of liberality on the part of the government—has prompted the officials controlling the management of these institutions to suggest the payment of a small fee by every patient treated in the outpatient departments and the "ambulances" of our clinics and hospitals. The ridiculous sum of one cent has been suggested, but even this has been received with scorn by both the profession and the public. The latter do not want to pay anything at all, since they pay rates and taxes, from which the hospitals are kept (or have to be kept) going, while the profession justly contends that it cannot ask for payment from those who are so poor as to come to hospitals. Anyhow, the amount collected from this small fee would be so insignificant that it is not worth while to bother the patients. The idea itself is a sound one, however, and could be easily worked out in such a way that for the first consultation and for operations (minor surgery) an appropriate, though modest fee could be demanded. Hospitals would have to be conducted not only under humanistic, altruistic notions, but also on business terms, partly at least. The idea has come to stay.

Veterinary Students Strike

The conditions prevailing in our veterinary schools are far from ideal. They are controlled and owned by the ministry of war, and the freedom enjoyed by the students of other universities is a luxury unknown to those taking up their curriculum in the veterinary university. Nevertheless, until a short time ago, the managing board of the latter institute maintained the privileges of the academic students. But quite recently, instruction in horseshoeing was given to men of no academic standing in this university and the indignation of the students at what they termed lowering the standard of the institute grew so intense that an actual uprising took place. The students struck work, prevented the classes given to other persons in the building, and refused to study any further until substantial satisfaction should be given them for the offense done them by degrading the university to a simple horseshoeing school. Needless to say, this occurrence is due to the attitude of military circles toward students and schools in general and the university was closed as answer to the demands of the students. Meanwhile, negotiations are going on to settle the affair.

The Proposed Successor of von Noorden

The vacant clinic of von Noorden, who preferred to leave Vienna because of unpleasant occurrences of a private nature (not medical), proves a real problem to those responsible for the administration of the board of teaching. The splendid equipment of this institute necessitates for its head a man of the very first class, but there are not many of this kind who would be willing to give up their present position. After long deliberation, the committee of the medical faculty of Vienna recommended that negotiations be begun with Professor Wenkebach of Greifswald. This scientist, who is well known for his researches in metabolism and physiology, although not so renowned as von Noorden, would be an excellent acquisition for Vienna owing to his teaching abilities. He is also not German but a native of Holland, which is another advantage in the eyes of our men, who have been none too well pleased with their experiences with the professors hailing from Germany. The esteem paid to Wenkebach is clearly shown, as he was recommended *primo et unico loco*.

Marriages

SAMUEL DUFF ANDERSON, M.D., Elvaston, Ill., to Mrs. Lena Everhart of Littleton, Ill., at Quincy, Ill., recently.

SURGEON RAYMOND SPEAR, U. S. Navy, to Miss Eleanor Coppinger Smith, in Washington, D. C., April 1.

HONORE D. VALIN, M.D., St. Peter, Minn., to Miss Frances Louise Powell of Kasota, Minn., March 28.

CHARLES EDWARD GILLILAND, M.D., Austin, Tex., to Miss Olive Wiley of Cameron, Mo., March 16.

ERNEST MILTON WATSON, M.D., Boston, Mass., to Miss Alice M. Wright of Worcester, Mass., April 2.

ORTON EUGENE WHITE, M.D. Buffalo, N. Y., to Miss Gertrude M. Shean of Syracuse, N. Y., March 28.

ALBERT VIRGIL FRANKLIN, M.D., to Miss Racine Olcott Curtis, both of New York City, March 25.

FRANK V. MCCONKEY, M.D., to Miss Grace M. Lindermuth, both of York, Pa., March 31.

FRANK MONROE WELDY, M.D., to Miss Rose Aurelia Seifried, both of Chicago, April 4.

Deaths

John D. McCleary, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1867; a Fellow of the American Medical Association; and for some time a member of the Board of Regents of the Iowa State University; for thirty-eight years a member of the Board of Commissioners for Insanity of Warren County, Ia.; and for fifty-two years a practitioner of Indianola, Ia.; assistant surgeon of the Thirty-Fourth and Forty-Sixth Iowa Volunteer Infantry during the Civil War; for forty-one years local surgeon of the Rock Island System; died at his home in Indianola, April 2, aged 84.

Gustavus Pierrepont Davis, M.D. College of Physicians and Surgeons, New York City, 1869; a member of the Connecticut State Medical Society, and formerly its president; for more than quarter of a century a visiting and consulting physician to the Hartford Hospital; for many years medical director of the Travelers' Insurance Company, Hartford; secretary and a member of the executive committee of the Connecticut Humane Society; died at his home in Hartford, April 1, aged 69.

Robert Cameron McDonald, M.D. McGill University, Montreal, 1880; a Fellow of the American Medical Association; for two years president of the Nebraska State Medical Association and formerly president of the Dodge County Medical Society; local surgeon at Fremont, Neb., for the Burlington System; a leader among the physicians of the state; died suddenly in Fremont, Neb., April 3, from cerebral hemorrhage, aged 54.

Herbert Otto Statler, M.D. University of Michigan, Ann Arbor, 1892; a member of the Michigan State Medical Society, and Kalamazoo (Mich.) Academy of Medicine; local surgeon at Kalamazoo for the Michigan Central Railroad; for four years a member of the medical staff of the Kalamazoo State Hospital; died suddenly at his home, March 29, from heart disease, aged 46.

Samuel Patterson Tipton, M.D. Rush Medical College, 1902; adjunct professor of clinical surgery in Southwestern University Medical College, Dallas, Tex.; a member of the State Medical Association of Texas, and a member of the staff of St. Paul's Sanitarium, Dallas; was instantly killed, March 26, when his automobile fell forty feet into a ravine near Dallas.

Elihu Brittin Silvers, M.D. College of Physicians and Surgeons, New York City, 1852; for several terms a member of the common council of Rahway; formerly superintendent of schools, and a member of the board of education; died at his home in Rahway, N.J., April 2, from heart disease, aged 85.

Edward Walter Pahl, M.D. Keokuk Medical College, College of Physicians and Surgeons, 1907; a Fellow of the American Medical Association; formerly of Cantril, Iowa; died at his home in Milton, Iowa, March 27, aged 29.

Orange H. Russell, M.D. College of Physicians and Surgeons, Keokuk, Ia., 1866; for half a century a practitioner of medicine; died at his home in Lomax, Ill., from senile debility, March 31, aged 74.

William Henry Dearing, M.D. University of Iowa, Iowa City, 1882; a member of the Nebraska State Medical Association; at one time state senator from Cass County, and formerly superintendent of the State Hospitals for the Insane at Lincoln and Norfolk, and the State Institution for the Feeble-Minded, Beatrice; died at his home in Lushton, Neb., March 28, aged 54.

Thomas A. Rex, M.D. Georgetown University, Washington, D. C., 1865; University of Pennsylvania, Philadelphia, 1866; a member of the Medical Society of the State of Pennsylvania; a practitioner of Pittsburgh for more than forty years; surgeon in the federal service during the Civil War; died at the home of his son in Los Angeles, March 31, aged 76.

Herman Fred Lange Ziegel, M.D. College of Physicians and Surgeons, New York City, 1901; a Fellow of the American Medical Association; assistant in the children's department of Mount Sinai Hospital, and a member of the staff of Beth Israel Hospital, New York City; died at his home in New York, March 27, from heart disease, aged 37.

Lafayette Woodruff, M.D. Starling Medical College, Columbus, O., 1852; a Fellow of the American Medical Association; formerly a member of the board of censors of his Alma Mater; a veteran of the Civil War; for forty-eight years a practitioner of Alton, O.; died at his home in Columbus, April 2, from cerebral hemorrhage, aged 83.

Samuel H. Gault, M.D. University of Nashville, Tenn., 1874; of Rogersville, Tenn.; surgeon in the Federal service during the Civil War; once postmaster of Rogersville and representative in the Legislature from Hawkins County; died March 31, at a sanatorium in Battle Creek, Mich., from pneumonia, aged 71.

Mordecai Hiatt Fletcher, M.D. Miami Medical College, Cincinnati, 1884; a Fellow of the American Medical Association and Cincinnati Academy of Medicine; a dentist and oral surgeon of high repute in Cincinnati; died at his home March 26, from cerebral hemorrhage, aged 64.

John Waldo Johnson, M.D. Harvard Medical School, 1877; in 1893 a member of the Boston city council, and three years later a member of the House of Representatives; a member of the Massachusetts Medical Society; died recently at his home in Boston, aged 57.

Edgar de Mott Stryker, M.D. College of Physicians and Surgeons, New York City, 1901; formerly of Pine Bush, N. Y.; but for the last four years in charge of a Hospital in Holkol, Korea; was shot and killed, March 29, by a Japanese, said to have been insane.

Leila Gertrude Bedell, M.D. Boston University, 1878; for many years a practitioner of Chicago and for ten years a resident of Tryon, N. C.; from 1885 to 1888, president of the Chicago Women's Club; died at her home in Tryon, N. C., March 28, aged 76.

Albert Brown Kruidenier, M.D. College of Physicians and Surgeons, Chicago, 1909; formerly an intern in Cook County Hospital; of Aberdeen, S.D.; died in St. Luke's Hospital in that city, April 2, three days after an operation for appendicitis, aged 31.

Thomas J. Ellis, M.D. Medical College of the State of South Carolina, Charleston, 1874; formerly of Amherst, Va., but for the last four years resident physician at the Telfair Sanitarium, Greensboro, N. C.; died in that institution, March 25, aged 52.

James Perrin Smith, M.D. Medical College of Georgia, Augusta, 1885; for two terms a member of the city council of Augusta, Ga., and for seventeen years a member of the board of education; died in the Augusta City Hospital, March 17.

J. Thor Rohm, M.D. College of Physicians and Surgeons, Baltimore, Md., 1880; for thirty years a practitioner of Redding, Cal.; once mayor of that city; and for one term coroner of Shasta County; died at his home, March 31, from nephritis, aged 62.

Francis Delmont, M.D. University of California, San Francisco, 1874; a member of the Medical Society of the State of California; and a pioneer practitioner of San Francisco; died in St. Winifred's Hospital, San Francisco, April 1, aged 73.

Warren H. Horton, Kansas City (Mo.), Homeopathic Medical College, 1891; city physician of Florence, Neb.; a veteran of the Civil War; was found dead in his automobile near Florence, Neb., April 4, from heart disease, aged 70.

George W. Brumley (license, Ark., 1903); a pioneer practitioner of Randolph County; died at his home near Biggers, Ark., March 23, aged 68.

Martin Hagen, M.D. Chicago College of Medicine and Surgery, 1908; a Fellow of the American Medical Association; of Viroqua, Wis.; was thrown from his buggy by a collision with a runaway team, March 22, and was instantly killed, aged 41.

Payson Jonathan Flagg, M.D. Jefferson Medical College, 1885; a member of the Massachusetts Medical Society; and chairman of the board of health of West Springfield, Mass.; died at his home in Mittineague, Mass., March 22, aged 55.

Patrick Sheedy Byrne, M.D. Bellevue Hospital Medical College, 1884; a member of the Washington State Medical Association; at one time mayor of Spokane, Wash.; died in Spokane, Wash., March 23, from cerebral hemorrhage, aged 58.

Horace E. Seastrunk, M.D. Barnes Medical College, St. Louis, 1896; local surgeon for the Southern Pacific Railway at Orange, Tex., and health officer of Orange County; died at the home of his father in Orange, Tex., March 25, aged 39.

Charles Emery Rowell, M.D. New York Homeopathic Medical College, New York City, 1875; mayor of Stamford, Conn., 1910 to 1913; a member of the Connecticut Legislature in 1897; died at his home in Stamford, Conn., March 29, aged 64.

Wells S. Jones, M.D. Starling Medical College, Columbus, Ohio, 1866; a veteran of the Civil War, in which he served as colonel of the Fifty-Third Ohio Volunteer Infantry; died at his home in Waverly, Ohio, March 21, aged 83.

William E. Easter, M.D. Western Reserve University, Cleveland, 1853; formerly president of the Ashley County (Ark.) Board of Health; a Confederate veteran; died at the home of his son in Hamburg, Ark., March 23, aged 82.

Burvia A. Houser, M.D. Medical College of Indiana, Indianapolis, 1890; a director of the Farmers' and Merchants' National Bank, Wabash, Ind.; died at his home in that city, March 25, from disease of the kidney, aged 47.

Ninian Calvin Smillie, M.D. University of Bishop's College, Montreal, 1882; for fifteen years port physician at Gaspé Basin, Que., and afterward a practitioner of Montreal; died at his home in Ottawa, Ont., February 12, aged 55.

Anabel McGaughey Stuart, M.D. Cooper Medical College, San Francisco, 1878; a Fellow of the American Medical Association; an Army nurse during the Civil War; died at her home in Santa Rosa, Cal., March 19, aged 73.

George Frederick Newcombe, M.D. College of Physicians and Surgeons, New York City, 1877; for five years coroner of Passaic County, N.J.; died at his home in Pompton Plains, N.J.; April 1, from heart disease, aged 64.

Frank Schilcher, M.D. University of Munich, Germany, 1857; for several years a surgeon in the Bavarian Army; for nearly forty years a practitioner and druggist of Pennsylvania; died at his home in Freeland, Pa., aged 80.

John D. Wood (license, Lawrence County, Pa., 1881); a practitioner of New Castle, Pa., for forty-seven years; a veteran of the Civil War; died at the Home for Soldiers and Sailors, Erie, Pa., March 24, aged 71.

John Herbert Cory, M.D. Eclectic Medical College of the City of New York, 1878; for many years a member of the Board of Education and Health Officer of Geneva, Ill.; died at his home in that city, about March 25, aged 62.

William J. Bartholomew, M.D. Northwestern Medical College, St. Joseph, Mo., 1887; a Fellow of the American Medical Association, and a druggist and physician of Gothenburg, Neb.; died at his home, March 31, aged 52.

A. Otto Hardenstein, M.D. Hahnemann Medical College, Philadelphia, 1881; of Vicksburg, Miss.; died in the Presbyterian Hospital, New Orleans, La., March 22, a week after an operation on the stomach.

Isaac B. Burrell, M.D. Leonard School of Medicine, Raleigh, N. C., 1893; one of the best-known colored practitioners of Roanoke, Va.; died in the Freedmen's Hospital, Washington, D. C., March 21, aged 46.

Elisha C. Dunn, M.D. American Eclectic Medical College, 1888; at one time secretary of legation at Constantinople; and once alderman of Rockford, Ill.; died at his home in that city, March 23, aged 74.

John E. Lopp, M.D. Barnes Medical College, St. Louis, 1898; formerly health commissioner and a member of the city council of Jefferson City, Mo.; died at his home in Lupus, Mo., March 23, aged 39.

Robert Funk, for more than thirty years a practitioner of Tacoma, Wash; died at his home in that city, Dec. 14, 1913, from carcinoma of the stomach, aged 79.

Bliss S. Thorne, M.D. New York University, New York City, 1864; a member of the New Brunswick Medical Society; died at his home in Butternut Ridge, N.B., January 25, from diabetes, aged 71.

Harry Barlow Cartwright, M.D. Rush Medical College, 1891; a Fellow of the American Medical Association; died at his home in East Liberty, Pittsburgh, Pa., March 29, from pneumonia, aged 50.

Thomas William Gallion, M.D. University of Tennessee, Nashville, 1885; formerly of Dandridge, Tenn.; died at his home in Mariposa, Cal., about March 28, from cerebral hemorrhage, aged 58.

Harvey Henderson Chase, M.D. College of Physicians and Surgeons, New York City, 1872; for thirty-seven years a practitioner of Linden, Mich.; died in Shelbyville, Ind., March 29, aged 65.

William A. Metcalf, M.D. Jefferson Medical College, 1884; of Steelville, Mo.; a member of the state Legislature in 1889; died in Josephine Hospital, St. Louis, March 17, from paralysis, aged 63.

Kay A. Sweet, M.D. University of Buffalo, N.Y., 1880; for twenty years a practitioner of Frewsburg, N.Y.; died at the home of his sister in Bradford, Pa., April 1, aged 61.

William T. Shrout, M.D. Eclectic College of Physicians and Surgeons, Indianapolis, 1891; died at his home in Waldron, Ind., March 28, from cerebral hemorrhage, aged 68.

Burt Leander Eastman, M.D. Chicago Medical College, 1892; a specialist in gynecology and abdominal surgery; died at his home in Kansas City, Mo., March 18, aged 43.

Eugene G. West, M.D. Hahnemann Medical College, Chicago, 1884; formerly of Effingham, Ill.; died at his home in Orange, N. J., March 29, from scarlet fever, aged 49.

James Clinton Baird, M.D. Vanderbilt University, Nashville, Tenn., 1882; Tulane University, New Orleans, 1883; died at his home in Los Angeles, Mach 22, aged 60.

John B. Wurtz, M.D. Hahnemann Medical College, Philadelphia, 1876; died at his home in Germantown, Philadelphia, April 3, from cerebral hemorrhage, aged 60.

Erwin G. Beckwith, M.D. Pennsylvania Medical College, Philadelphia, 1860; died at his home in Fostoria, Ohio, March 5, from cerebral hemorrhage, aged 85.

Mary Cobb Stacy Hodgson, M.D. New England Female Medical College, Boston, 1867; died at her home in Stoneham, Mass., February 18, aged 72.

Alexander Sangster, M.D. Victoria University, Coburg, Ont., 1884; died at his home in Stouffville, Ont., March 23, from Addison's disease, aged 55.

Charles T. Hunter, M.D. University of Tennessee, Nashville, 1878; died at his home in Springerton, Ill., March 18, from heart disease, aged 74.

Vincent Gilbert Hamill, M.D. University of Buffalo, N. Y., 1884; died at his home in New York City, March 25, from heart disease, aged 51.

William Peach, M.D. Cleveland University of Medicine and Surgery, 1877; of Pittsburgh, Pa.; died in Elizabethtown, Pa., February 12, aged 76.

Harvey James Sullivan, M.D. University of Toronto, Ont., 1902; died at his home in Chatham, Ont., March 18, from pneumonia, aged 38.

Emery C. Whitaker, M.D. University of Louisville (Ky.) 1875; of Maysville, Ky.; died in Cincinnati, March 6, from pneumonia, aged 61.

Albert Waldo Forbush, M.D. Eclectic Medical College of the City of New York, 1881; of Somerville, Mass.; died about March 22, aged 60.

Robert J. McMichael, M.D. Wooster (Ohio) Medical College, 1881; died at his home in Eau Claire, Wis., February 6, aged 63.

Benjamin F. Spencer, M.D. University of Louisville, Ky., 1874; died at his home in Weston, Tex., March 25, aged 61.

J. Thornton Smith, M.D. Baltimore (Md.) University, 1890; died at his home in Chaneysville, Pa., January 31, aged 64.

George Harrison, M.D. Trinity Medical College, Toronto, 1890; died at his home in Clifford, Ont., March 7, aged 55.

Marshall R. Glenn, M.D. Jefferson Medical College, 1909; died at his home in Asheville, N. C., January 24, aged 31.

Samuel B. Swavely, M.D. Jefferson Medical College, 1877; died at his home in Pottstown, Pa., March 4, aged 62.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

HYPEROL

Report of the Council on Pharmacy and Chemistry

The Purdue Frederick Company, exploiters of Gray's Glycerine Tonic, have recently been advertising to the medical profession a nostrum called Hyperol. The following report to the Council, by the referee, was adopted and its publication authorized. W. A. PUCKNER, Secretary.

According to the label, Hyperol is "A Utero-Ovarian Corrective and Tonic." The circular accompanying the trade package states that it is:

"Indicated in all functional diseases of women such as: Amenorrhea, Dysmenorrhea, Menorrhagia, Metrorrhagia, Subinvolution, and in all conditions requiring a utero-ovarian corrective and tonic."

From another circular we learn that:

"Hyperol is a combination of Hydrastine, Aloin, Iron, Apiol and Ergotin. Its components to a certain extent will indicate its action, but the therapeutic effects of each ingredient seems to be augmented to an unusual degree by use in this particular combination. The proportions of each have been determined by extensive clinical experimentation, and the formula seems to be exactly balanced to produce the best therapeutic effects in all derangements of the utero-ovarian functions."

This "formula" is not very enlightening and a physician who wrote for further details was told that Hyperol contained:

Hydrastin	1/40 gr.
Aloin	1/12 gr.
Iron salts	3 gr.
Apiol (Special)	3 m
Ergotin	1 gr.

And excipients.

If this is correct, then, so far as its active ingredients are concerned, Hyperol is but a mixture of well-known drugs, having contradictory properties. According to the claims in the circular quoted above, it is useful both in amenorrhea and in menorrhagia. The mixture is as unscientific as it is unnecessary. It cannot be adapted to any individual case; when ergot is indicated, apiol would naturally be contra-indicated; if aloes is appropriate, hydrastin may defeat the object sought. It is unnecessary because no intelligent physician would prescribe such a combination of drugs in any given case. The claims are exaggerated, improbable and foolish. Hyperol conflicts with the following rules of the Council:

Rule 4, in that statements on the label and in the circular enclosed with the trade package advertise it to the public in the treatment of diseases.

Rule 6, in that exaggerated and unwarranted claims are made for its therapeutic qualities.

Rule 8, in that the name of this pharmaceutical mixture fails to disclose the potent constituents.

Rule 10, in that it is unscientific.

It is recommended that publication of this report be authorized to call attention to the unscientific character of such complex mixtures.

EDITOR'S NOTE: Hyperol is advertised in *American Medicine* and the *St. Paul Medical Journal*.

THE GERMAN COUNCIL ON PHARMACY AND CHEMISTRY

At the meeting of the German Congress for Internal Medicine in 1911, a German council on pharmacy and chemistry, Die Arzneimittelkommission des Kongresses für innere Medizin, was organized, with purposes similar to those for which the Council on Pharmacy and Chemistry of the American

Medical Association was created. As practically nothing has been done to restrict the advertising of proprietaries in Germany, the task of the commission was tremendous. Its work has been noted in THE JOURNAL from time to time.[1] A review of what has been done up to the present is given by Heubner,[2] and indicates some differences between conditions in Germany and this country. The members of the commission found confronting them the same evils that met the early efforts of the American council, namely, dominant proprietary interests, a subservient and financially interested medical press and an indifferent profession. Moreover, the pecuniary interest of the editors of German medical journals in the profits of advertising seems to be more direct and more important than in America. The German commission, in Heubner's opinion, was placed at a disadvantage compared with the American council from the first. Funds for investigation were lacking, and the commission had no journal in which its objects could be presented to the medical profession. At the beginning of its work the commission established rules very similar to those of the American Council on Pharmacy and Chemistry. It listed the articles advertised in German medical journals in three groups: (1) those which conformed to the rules of the commission in the method of advertising; (2) those which violated the rules, and (3) those whose classification could not be determined. This amounted to an attack on advertising in medical journals and was undoubtedly premature. It aroused at once the antagonism not only of the proprietary interests but also of the medical press.

"The establishment of the lists of medicines encountered opposition or hindrance from three sources," says Heubner, "first, from the pharmaceutical and chemical manufacturing interests; second, from the medical press, and third, from the medical profession itself. The 'trade' naturally was irritated at any attempt to interfere with 'business,' and brought forward a number of reasons why the procedure adopted by the commission was especially calculated to injure the 'general welfare.' This opposition was to be expected and might be disregarded. The extent to which the medical press was dependent on the drug trade, however, had not been foreseen. The same journals in which for many years all sorts of articles on the evils in the trade in medicines had appeared showed themselves decidedly cool or emphatically critical toward the accomplished fact of the 'lists of remedies.' In hastily written articles a whole series of mistakes in general and in particular were published. . . . One thing, however, was not explicitly stated—namely, that in any event the lists of remedies must be rejected, and for this the cogent reason was anxiety in regard to advertisements. The editors had been sufficiently warned. The *Therapeutische Monatshefte*, which had not submitted to the wish of a great industrial firm in another matter, was punished for this offense by the withdrawal of all its advertisements. None of the other publishers wanted to risk such a reduction in income, and none of the editors was willing to undertake the risk to the extent of a conflict with his publisher. Curiously, the idea does not seem to have arisen that if the threatened publishers had made common cause they might have freed their editors from the distressing burden of improper advertisements with scarcely any risk at all."

Heubner believes that another motive influencing the editors was the fact that their efforts in behalf of reform, sporadic and ineffective at the best, had been replaced by the propaganda of the commission. It seems clear that the opposition from the press was due not to principle chiefly but to financial pressure. The editors, however unworthy their motives, nevertheless exerted, as in other cases, a powerful influence on public opinion. Among the medical public, opposition was encountered because many physicians were interested—sometimes financially—in one or more of the discredited remedies. The mass of the profession either were not interested or misunderstood the position of the council.

Despite the obstacles encountered and the difficulties involved, the council and the Congress of Internal Medicine have not wavered. Heubner, however, sums up the work of the council in a rather pessimistic tone, as follows:

"What are the results of the great amount of labor, self-sacrifice, hopeful courage and wasted money? Two journals pretend to be doing wonders in that they are eliminating some of the worst misstatements, distortions, obscurations and concealments of truth in the advertisements. Physicians at certain intervals receive lists of preparations, the manufacturers of which as a rule do not need to pay any attention to the council because their dealings are directly with the public, because their advertisements are usually made to physicians by word of mouth, or their preparations have already a sufficient reputation—no matter for what reason. . . .

"There is little doubt that the results have not paid for the efforts expended. There is no doubt that the whole enterprise will amount to nothing more than a splash in the water if the work is not extended, just as a preliminary skirmish must remain without effect unless followed up by the main army. The main army in this case is the German medical profession. However gratifying the progressive attitude of some individuals and, in fact, of some associations, such as that of Wurtemburg, may be, the fact remains that the profession [in Germany] is not advancing but rather tends to retrograde. The support which the executive committee of the Aerztevereinsbund at first accorded to the efforts of the council was later limited. All further progress depends on the developments of the near future. Will sufficient power be given to the German medical profession after settlement with the insurance societies to permit them to follow the example of their American colleagues?

"It should be made perfectly clear," Heubner insists, "that we are concerned with questions of importance for the standing and influence of the medical profession among the people, and, consequently, for the conditions of its future existence. But even now the consequences of the prevailing indifference to the traffic in nostrums are making themselves felt. The prevalence of self-medication, which was lately recognized by a Berlin court as the normal for 'slight' affections and which has already been made an argument against the extension of the compulsory prescription law, is merely a result of the great evil based on the loss of control by the medical profession of the remedies it employs. Only centralized and energetic measures on the part of the organized profession can secure a reformation of the intolerable conditions that prevail in the field of modern industry in medicine and foodstuffs. The American Medical Association and the German Arzneimittelkommission have shown that a little sacrifice and energy can secure a condition in which the medical profession becomes a powerful factor, able to dictate in the field of the trade in medicine instead of letting itself be dictated to."

1. A German Council on Pharmacy and Chemistry, Propaganda, THE JOURNAL A. M. A., July 27, 1912, p. 291; Current Comment, Aug. 10, 1912, p. 452. Reform in the Advertising of Proprietary Medicinal Articles, Berlin Letter, Dec. 7, 1912, p. 2081. Heubner, W.: Wünsche zur Reform des Arzneivertriebes, Therap. Monatsh., 1912, xxvi, No. 11; abstr., THE JOURNAL A. M. A., Dec. 14, 1912, p. 2195.

2. Heubner: Die Arzneimittelkommission des deutschen Kongresses für innere Medizin, Therap. Monatsh., 1914, xxviii, 185.

THE SUBLIME ASSURANCE OF THE FRIEDMANN VACCINE PROPAGANDA

Under this heading the *Southern Medical Journal* for March publishes the following editorial:

"A certain lawyer in Milwaukee, by the name of Rose, has written a letter to the senior editor of this journal asking him to 'calmly and dispassionately consider such evidence as I may send to you respecting the merits of the Friedmann vaccine.'

"Mr. Rose will be remembered by Alabama physicians as the apostle from the city made famous by certain brews of beer who a few years ago came into our state to instruct from the public platform our people regarding the health-giving properties of alcoholic beverages. He is probably prompted by the same philanthropic impulses when he attempts to inform physicians and the public of the 'miraculous results' of the serum that made Friedmann famous as well as rich.

"The editor begs leave to assure Mr. Rose that he has already devoted considerable attention to the claims of the Friedmann vaccine, 'in an unprejudiced way,' and that his

information was derived from 'unprejudiced' sources, such as 'unprejudiced' case histories wherein a few instances of temporary improvements were swamped by the authoritative reports of ultimate failure; he has considered the conservative estimates presented by investigators in hospitals and in the United States Public Health Service, and has reached the conclusion that thus far the Friedmann 'cure' has signally failed to make good; that, in this country at least, it is being exploited in a way that, in itself, would shake any faith an ethical physician might feel inclined to repose in it; and that not until medical authorities in the places where the experiment has been thoroughly tried have pronounced it trustworthy will he see any good reason for changing his opinion. One thing is certain; he will not accept as reliable, testimony in its favor from any physicians who are making it a specialty, or serve in hospitals chiefly devoted to its exploitation. He will not attach any value to the opinions of lawyers, however eminent, or of preachers, however devoted, for the simple reason that they lack the professional knowledge which alone could render them competent judges. As for testimonials, their absolute worthlessness is illustrated by the literature distributed by Royal Germateur, Peruna, and 'Duffy's Pure' vile compound. 'David S. Rose, lawyer,' writes as follows:

"'*We* opened *our* laboratories here on August 21, and so far *we* have treated *about* one hundred cases.' (Italics ours.—*Journal.*)

"One might wonder whether the 'we' includes any physicians, or whether they are all lawyers.

"Inspired by this liberal offer on the part of a representative of the legal profession to enlighten the doctors of the South on a medical point of great importance, will not some enterprising Southern doctor provide a *quid pro quo* by instructing Mr. Rose in the routine of court procedure in Wisconsin? It will not be necessary for the doctor to know any more about law than most lawyers know about medicine. Here is an opportunity for missionary work."

Correspondence

The Friedmann Serum and the Society of German Sanatorium Physicians

To the Editor:—Early last month in some of the leading New York American and German-American newspapers there appeared a statement that on the occasion of the annual meeting of the Association of German Sanatorium Physicians on February 28, one hundred and twenty of these physicians had carefully investigated the results of Friedmann's work, that 40,000 patients had been treated with Friedmann's serum and that the successes had been simply phenomenal. It was furthermore reported that Dr. Friedrich Franz Friedmann had been the guest of honor at a banquet given by the sanatorium physicians and that he had been effusively thanked by Privy-Councillor Professor Dr. Pannwitz for his work, in the name of the sanatorium physicians present. Finally, said the newspaper report, Dr. Friedmann stated to an American press representative that Professor Ehrlich had expressed the opinion that the Friedmann serum was absolutely harmless.

In a communication bearing the signatures of the president, Dr. O. Pischinger, the vice-president, Dr. J. Ritter and the secretary, Dr. Schellenberg, of the Association of Sanatorium Physicians of Germany, Austria and Switzerland, I have been requested to enlighten the American medical profession concerning their visit to the Friedmann Institute in Berlin, and to give the facts the widest possible publicity, at least among medical men.

First of all, the officers of the association expressed their astonishment that the visit of the sanatorium physicians to the Friedmann Institute should have been used as a means of advertising Friedmann and his remedy abroad. Because of the report of cures which constantly crept into the German medical and lay press and the demands for the remedy from many sanatorium patients, it was natural that the sanatorium physicians while visiting Berlin should wish to see for themselves what was going on in the Friedmann Institute. Thus they asked Friedmann to show them his cases and give them a talk on the indication for his remedy. About 60 of the 125 members of the association visited the Friedmann Institute Feb. 26 and 27, 1914. They distinctly stated that their visit was in no way to be considered a pilgrimage to pay homage to Friedmann for his discovery but rather an investigation to find out just how much truth there was in his claims. Many had already tried the remedy and had been disappointed; others were prejudiced, and it was for this reason that they wanted to examine critically into Friedmann's claims. No banquet was given to Dr. Friedmann. After the conclusion of the visit there was a confidential conference, without Dr. Friedmann, at which the members concluded to discuss the theme again next fall and in the meantime collect as much material as possible.

That I may not be accused of prejudice or misinterpretation, I wish to quote in German the most essential statements which were made as the result of the visit of the association to the Friedmann Institute:

"Wir waren uns darüber einig, dass die uns von Friedmann gezeigten Fälle klinisch recht schlecht beobachtet waren und im Allgemeinen keineswegs als 'Erfolge' angesehen werden konnten. Wir haben uns gewundert, dass uns keine ordnungsmässig geführte Kurve gezeigt wurde. Die Roentgenplatten, die man uns zum Beweis zeigte, bewiesen tatsächlich garnichts. Wir geben zu, dass einzelne Fälle allerdings einen gewissen Eindruck auf uns gemacht haben, *wobei wir uns aber auch darüber klar waren, dass solche Fälle auch ohne jede Behandlung und bei jeder Behandlung vorkommen können*, und dass die Zahl dieser Fälle verhältnissmässig *viel* zu klein war, um ein günstiges Urteil über das Mittel abgeben zu können."

[We were of the unanimous opinion that the cases shown by Friedmann had been clinically very badly observed, and as a whole could not be considered as successes or cures. We were astonished that no carefully recorded temperature and weight curves were shown. The Roentgen-ray plates which were shown to us as evidence of cures did not actually prove anything whatsoever. We will admit that some cases indeed made an impression on us, but here we must also remember that such cases occur without any treatment or with any kind of treatment, and that the number of them were altogether too few to permit a favorable judgment of the value of the remedy.]

I have since received a letter from Geheimrat Prof. Dr. Pannwitz in which he substantiates what has been said in the official communication from Drs. Pischinger, Ritter and Schellenberg. He particularly expresses his indignation at the use of his name in connection with a banquet which never took place. He declared the whole thing to be a newspaper invention.

Prof. Dr. L. Brauer, director of the Eppendorfer Krankenhaus of Hamburg, who had also heard the American version of the sanatorium physicians' visit to the Friedmann Institute in Berlin, wrote me an indignant letter, saying that he "had tried Friedmann's remedy at the Eppendorfer Krankenhaus and the results had been unfavorable." He has reported these unfavorable results recently at the Balneological Congress and the Hamburger Aerzte Verein, and intends to publish more on the subject soon. He has since sent me the advance sheets of his forthcoming communication regarding Friedmann wherein he says: "The pulmonary cases tested in the Eppendorfer and Salemburg hospitals with Friedmann's method did not improve, but some of them without a shadow of doubt were rendered worse by the treatment. Five cases of bone and joint tuberculosis in children treated with the Friedmann serum by Dr. Trepler in the Salemburg institution were not influenced at all by the treatment and in one case, although the movement of the afflicted joint increased, the general condition of the lesions was rendered worse."

In paying a gratifying tribute to the earnest and unbiased work done with Friedmann's serum by American investigators, which likewise gave unfavorable results, Professor Brauer advised me, in the interest of the German medical profession, and especially in the interest of the unfortunate patients who naturally are inclined to accept such advertised endorsement as genuine, that it would be most desirable for the present status of the Friedmann remedy in Germany to be made clear to the American medical profession and the laity.

S. A. KNOPF, M.D., New York.

Face-Powder Conjunctivitis

To the Editor:—For several years occasional cases have come under observation in which the trains of symptoms complained of have been almost identical and in which the result of microscopic examination of the secretion from the culdesac has rarely varied.

The patients, invariably women, complain of vision frequently being blurred, inability to use the eyes for any length of time for near vision, and severe itching of the lids which frequently is intolerable. The slightest rubbing of the lids produces quite marked bulbar hyperemia and only aggravates the itching. In severe cases the lids frequently appear quite edematous from the constant hard rubbing. There is a mucilaginous secretion in varying amounts, which when being removed pulls out in long strings and is quite elastic. Microscopic examination of the secretion reveals great numbers of epithelial cells, in the midst of which or surrounding which are found masses of what appear to be pentagonal crystals, the majority having a central black spot which may be brought out more plainly by slight changes with the fine adjustment. In a few cases there are many fine amorphous crystals disseminated throughout the mass of epithelial cells, and pentagonal crystal-like bodies, but these are not constant. Micro-organisms are conspicuous by their absence.

Smears taken from these cases have been shown to a number of pathologists, bacteriologists and chemists and the symptoms described, but a satisfactory explanation has never been given. Many suggested that the "crystals" might be secreted by the lacrimal gland, others that they were artefacts. Last fall slides prepared from secretion taken from the eyes of two sisters having the usual train of symptoms were submitted to Dr. C. H. Bunting, professor of pathology of the University of Wisconsin College of Medicine, who writes:

"After trying various solvents I found that strong alkalies caused the crystals to swell and become spherical with a doubly contoured wall. When they swelled enough to rupture, iodin showed that they discharged soluble starch into the surrounding fluid. So you are dealing with plant-cells, probably from some face-powder. They are not lycopodium."

After examination of various face- and dusting-powders, Dr. Bunting reported as follows:

"Your 'crystals' come from rice-powder. I think they must be the cells that form the hard exterior, but I have not determined that. I have looked over your samples of face-powder and rice-powder and find the small amorphous crystals, mentioned in your letter, in the face-powder and not in the rice-powder. They do not seem to be organic in nature and are not easily soluble in cold water (if at all), but they seem in a hopeless minority as compared to the rice-cells. I am not chemist or crystallographer enough to tell what they are. They seem so minute, as a rule, in comparison to the size of the rice-starch, and so few, I should be inclined to view the latter as the irritating agent."

On inquiry the face-powder used was found to have been made by Roger & Gallet. Seven other patients in whom the same symptoms and microscopic conditions were found all used the same make of face-powder.

In all probability when powder is applied to the face with a puff a portion of the fine dust is driven upward and lodges on the moist conjunctiva. The rice-flour in the presence of the tears becomes mucilaginous in character and is not washed from the culdesac. The woody cells of the hard exterior of the rice-grain swell, and the angular corners produce the conjunctival irritation, which is aggravated by rubbing. Those who use a chamois-skin in applying the powder are less liable to cause the fine dust to arise, which probably accounts for the condition not being found in every person using face-powder.

The condition is quickly relieved by flushing the culdesac with boric or normal salt solution and the use of an ointment made up of equal parts of lanolin and petrolatum, which seems to cause an agglutination of the cells and permit their being easily flushed out; 0.5 per cent. yellow oxid of mercury salve is usually prescribed. The irritation quickly subsides under a sedative collyrium.

NELSON M. BLACK, M.D., Milwaukee, Wis.

A Case of Voluntary Control of Ascent and Descent of Testicle

To the Editor:—While I was engaged in some routine work for one of our charitable organizations, a boy aged 12 was brought to me for medical inspection. The possibility of the necessity of circumcision is always entertained in the work of this society, and accordingly the youngster was made to expose his genitalia. Phimosis was present, but in addition the scrotum was observed to be empty, and the observation was confirmed by palpation; nowhere were even the most rudimentary testicles to be felt. The boy was asked if they had ever come down, to which he replied that they did but that he put them back again. He further volunteered to bring them down for me if I desired, and by a little manipulation of the abdominal wall and contraction of the abdominal muscles, each testicle appeared in its proper place. Each had to be brought down separately, but neither could be said to be thoroughly developed in proportion to the boy's general physical development. In order to display his accomplishments further, he proceeded to replace the testicles in the abdomen, and when he had finished, neither could be palpated. When asked why he did this, he said he played rather roughly and he did it to protect himself from injury. The possibility of injury, in his case especially, was very remote on account of the small size of the organs, but subsequent inquiry determined the fact that it was one of the several feats he learned while in contact with a group of juvenile delinquents.

SAMUEL HORTON BROWN, M.D., Philadelphia.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

POISONING BY WILD PARSNIP

To the Editor:—Kindly let me know the nature of the poison of the wild parsnip and the treatment of poisoning caused by it. I have lately read of several fatalities from eating it. Some time ago I had a family all of whom were made ill by eating the cooked wild parsnip. They recovered with emetics, purgatives and stimulants. Is it more poisonous when uncooked?

W. J. LEROSSIGNOL, M.D., Rifle, Colo.

To the Editor:—Please find enclosed a clipping from the Denver *Post*, March 30, 1914, with reference to poisoning by wild parsnip. I shall be glad to receive any information which you can give about the wild parsnip. We have had three cases with two deaths within the last three weeks.

H. B. CATRON, M.D., Englewood, Colo.

ANSWER.—The wild parsnip belongs to the genus *Cicuta*, which is closely related to the genus *Conium*, from which the official drug conium is derived. The European variety, *Cicuta virosa*, is called white or water-hemlock or cowbane, wild or spotted parsley or parsnip, brook-tongue, death-*in*, etc., and the American variety, *C. maculata*, is known as wild or American water-hemlock, spotted hemlock, cowbane, spotted parsley, wild parsnip, beaver, muskrat or musquash root or poison, children's death or children's bane. Both species are used to some extent in medicine and both are responsible annually for several cases of fatal poisoning, chiefly of children. *Cicuta maculata* is a common water-weed with a thick, hollow, glaucous-purple, somewhat spotted stem, which sometimes reaches a height of 8 feet and branches strongly, the ascending branches terminating in large umbels of white flowers. The important active constituent is said to be cicutoxin except in the fruit, in which it is replaced by cicutin, which is believed to be identical with coniin. The fleshy roots are often mistaken for Jerusalem artichokes or other edible tubers. As coniin is a volatile alkaloid it is probable that enough might be volatilized in the process of cooking to make the cooked product less poisonous than the uncooked. Nevertheless, reports of cases in which the cooked roots were used indicate that the results were as violent when the roots were eaten after cooking as when they were taken uncooked. Five cases have been reported in which the plant *Cicuta aquatica* was used for the relief of itching with the result that all developed toxic symptoms and two children died. An account of the plant, a description of the symptoms of poisoning, and a review of reported cases, are

given by Egdahl (A Case of Poisoning Due to Eating Poison-Hemlock, *Arch. Int. Med.*, March, 1911, p. 348).

The treatment of such poisoning is well outlined by Dr. LeRossignol in his communication. The stomach should be emptied by an emetic or by the use of the stomach-tube, a mild purgative given and stimulants administered as they seem to be required. The hypodermic use of strychnin would be appropriate unless convulsions were present.

ARTICLES AND BOOKS ON LEAD-POISONING

To the Editor:—I should like to have references to literature on the subject of lead-poisoning; prevention in smelters and manufacturing plants; treatment; acute and chronic lead-poisoning, and so-called "lead colic."

G. T. GOSSARD, M.D., Lorraine, Ill.

ANSWER.—The following articles and books discuss these questions:

Carlson, A. J., and Woelfel, A.: The Solubility of Lead Salts in Human Gastric Juice, and Its Bearing on the Hygiene of the Lead Industries, THE JOURNAL, July 19, 1913, p. 181.
Lead-Poisoning, Therapeutics, THE JOURNAL, Sept. 6, 1913, p. 772.
The Toxicity of White Lead, Current Comment, THE JOURNAL, Feb. 22, 1913, p. 603.
Household Lead-Poisoning, Paris Letter, THE JOURNAL, April 19, 1913, p. 1239.
Lead-Poisoning, Bull. 95, Bureau of Labor, Washington, D. C., 1911.
Oliver, T.: Dangerous Trades, New York, E. P. Dutton & Co., price, $8.
Legge, M.: Lead-Poisoning and Lead Absorption, New York, Longmans, Green & Co., price, $3.50.
Rambousek, J.: Industrial Poisoning from Fumes, Gases and Poisons of Manufacturing Processes, New York, Longmans, Green & Co., price, $3.50.
Blackey, H. B.: Occupational Diseases, *Ohio State Board of Health Month. Bull.*, March, 1913.
Mayo, Earl: The Work That Kills, *Outlook*, Sept. 23, 1911.
Chronic Lead-Poisoning, published by State Board of Health of Maine.
Stitt, E. R.: Lead-Poisoning from Inhalation of Red-Lead Dust, *U. S. Naval Med. Bull.*, vi, No. 2.
Schoenfeld, J.: Importance of Examination of the Blood in Lead-Poisoning, *Med. Klin.*, May 18, 1913.
Carlson, A. J., and Woelfel, A.: Solubility of White Lead in Human Gastric Juice, and Its Bearing on Hygiene of Lead Industries, *Am. Jour. Pub. Health*, August, 1913.
Kenney, J. S.: Lead-Poisoning in New York City, *Med. Rec.*, New York, Sept. 6, 1913.
Mellon, R. R.: Relation of Fatigue to Paralysis Localization in Plumbism, *Arch. Int. Med.*, October, 1913, p. 398.
Oliver, T.: Preventive and Curative Treatment of Industrial Lead-Poisoning, *Lancet*, London, Aug. 23, 1913.
Zondek, H.: Radial Paralysis from Lead-Poisoning, *Med. Klin.*, Oct. 26 and Nov. 2, 1913.
Lian, C., and Marcorel, E.: The Bradycardia of Lead-Poisoning, *Presse méd.*, Feb. 8, 1913.
Eichhorst, H.: Lead-Poisoning and Spinal Cord Disease, *Med. Klin.*, Feb. 9, 1913.
Althoff, H.: Lead-Poisoning in Workers on Brass, *München. med. Klin.*, March 11, 1913.
Decastello, A., and Oeznacki, A.: Acute Lead-Poisoning, *Med. Klin.*, April 6, 1913.
Gibson, J. L.: Wassermann Reaction in Lead-Poisoning, April 5, 1913.
Chase, R. G.: Case of Chronic Lead-Poisoning in Which Multiple Aneurysms Occurred, *Brit. Med. Jour.*, April 26, 1913.

REQUIREMENTS FOR EXAMINER IN LUNACY IN NEW YORK STATE

To the Editor:—Please give the requirements for examiner in lunacy in New York State.

MAX SCHULTZ, M.D., Brooklyn.

ANSWER.—See Chapter 27 of the Consolidated Laws of New York, Article 4, under the head "Commitment, Custody and Discharge of the Insane," Paragraph 81, "Medical Examiners in Lunacy; Certificates of Lunacy": The certificate of lunacy must show that the person alleged to be insane is insane, and must be made by two reputable physicians, graduates of an incorporated medical college, who have been in the actual practice of their profession at least three years, and have filed with the commission a certified copy of the certificate of a judge of a court of record showing such qualifications in accordance with forms prescribed by the commission. The physicians shall jointly make a final examination of the person alleged to be insane within ten days next before the granting of the order. The date of the certificate of lunacy shall be the date of the joint examination. The certificate of lunacy shall be in the form prescribed by the commission and shall contain the facts and circumstances on which the judgment of the physicians is based, and show that the condition of the person examined is such as to require care and treatment in an institution for the care, custody and treatment of the insane. Neither of the physicians shall be a relative of the person applying for the order, or of the person alleged to be insane, or a manager, superintendent, proprietor, officer, stockholder, or have any pecuniary interest, directly or indirectly, or be an attending physician in the institution to which it is proposed to commit the person alleged to be insane.

ARTICLES ON ANAPHYLACTIC DEATH

To the Editor:—Please inform me from your literature index where I can find the reports of sudden anaphylactic death in patients after the injection of serum. I understand that there have been reported about twenty such cases although I have no references.

CLARENCE H. PAYNE, Chicago.

ANSWER.—The following is a list of articles on this subject:

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BENZIDIN TEST AND THREAD TEST

To the Editor:—Please describe (1) the benzidin test and (2) the thread test in ulcer of the stomach.

WILLIAM H. WALKER, M.D., Kansas City, Kan.

ANSWER.—1. The benzidin test should be preceded by abstinence from meat or other sources of hemoglobin for at least two days. The feces are then examined as follows: The stool is extracted with a mixture of alcohol and ether. The residue is then treated with glacial acetic acid and with ether, as in the other tests for occult blood. This acid ethereal extract, which contains the hematin, is then treated with 2 c.c. of a saturated alcoholic bezidin solution and 2 c.c. of a solution of hydrogen dioxid (3 per cent.). In the presence of blood an intense green color appears. Failure of the green color indicates the entire absence of blood.

2. The thread test is performed by having the patient swallow an Einhorn duodenal bucket. The bucket is allowed to remain in the duodenum over night. On removal, a portion of the thread which is attached to the bucket will be stained with blood. (Bassler recommends that the thread be attached to a split shot.) Such a stain indicates the presence of an ulcer. The thread test for acidity was described Feb. 14, 1914, p. 579.

PHENOLPHTHALEIN

To the Editor:—1. Can phenolphthalein be taken indefinitely without injurious results?
2. What is its true value as a laxative?
3. How does it act?
4. Does its prolonged use require increased dosage?
5. Can it be administered with or in combination with sodium chlorid?

H. S. BARTHOLOMEW, M.D., New York.

ANSWER.—1. So far as we know, no toxic or injurious results have been reported from the continued use of phenolphthalein in medicinal doses. A case of poisoning from taking 1 gm. is reported.

2. It acts as a purgative, does not gripe and appears to possess no further physiologic action.

3. It acts chiefly by stimulating peristalsis, but also increases secretion to some extent.

4. Prolonged use does not seem to require increased dosage.

5. It may be administered with sodium chlorid.

Phenolphthalein is described in N. N. R., 1914, p. 206.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF POST-GRADUATE WORK, CONTRACT PRACTICE, LEGISLATION, MEDICAL DEFENSE, AND OTHER MEDICOLEGAL AND ECONOMIC QUESTIONS OF INTEREST TO PHYSICIANS

THE HARRISON BILLS AND THE NELSON AMENDMENT

Mention has previously been made in THE JOURNAL of the so-called "Harrison bills" for the regulation of the traffic in habit-forming drugs. The first two measures, H. R. 1967 and H. R. 1966, have passed both houses of Congress and have become laws. They prohibit the importation of opium for other than medicinal purposes and forbid the manufacture of smoking-opium in the United States. The third bill, H. R. 6282, is an effort to regulate the sale of habit-forming drugs in the United States, by imposing a special tax on all persons who deal in or handle opium or coca leaves or their derivatives.[1]

HOW THE BILL PASSED THE HOUSE

There has not been, at any time, any opposition on the part of individual physicians or of the medical profession as a class to the proper regulation of the sale of habit-forming drugs and the restriction of this traffic to purely legitimate purposes. H. R. 6282, as it passed the House, provided that any person "who produces, imports, manufactures, compounds, deals in, dispenses, sells, distributes or gives away opium or coca leaves or any compound, manufacture, salt, derivative or preparation thereof" shall register with the internal revenue collector of his district. A provision in the second section specifies that nothing contained in the section "shall apply to the dispensing or distribution of any of the aforesaid drugs to a patient by a physician, dentist or veterinary surgeon, registered under this act, in the course of his professional practice only, provided, that such physician, dentist or veterinary surgeon shall personally attend on such patient."

SENATE AMENDMENTS

The language of the bill as it passed the House was the result of long and careful deliberation on the part of all those interested in the bill and in a proper regulation of the sale of habit-forming drugs. It would seem to be unwise at the present stage of the bill's progress to introduce changes which do not materially strengthen the bill or add clearness to its provisions. Several amendments, however, have been introduced in the Senate. One includes hypodermic syringes and needles as forbidden articles of sale. Another substitutes for the proviso that physicians shall be in attendance on the patient, the following: "Provided that such physician, dentist or veterinary surgeon shall have been specially employed to prescribe for the particular patient receiving such a drug; and provided further that such drug shall be dispensed in good faith and not for the purpose of evading the provisions of this act." This amendment simply requires special employment instead of personal attendance as the test of bona-fide professional services and is not in any way objectionable.

A most important amendment, however, was introduced by Senator Nelson of Minnesota: "After the word 'act' add the following words: 'and provided further that such physician, dentist or veterinary surgeon shall keep or cause to be kept a list of names and addresses of all persons to whom the aforesaid drugs were so administered, and the date thereof, and shall preserve such names and addresses for a period of two years from the dates thereof in such a way as to be readily accessible to inspection by the officers, agents, employees and officials hereinbefore mentioned.'"

PRESENT STATUS OF THE BILL

The bill has been reported by the Finance Committee of the Senate; it is now on the Senate calendar and may be called up at any time. Any amendments to the bill, including that offered by Senator Nelson, will not be referred to the Finance Committee but will be either adopted or rejected on the floor of the Senate. The bill has already passed the House, so that if it passes the Senate in a form in any way different from that in which it passed the House, it will have to go to a conference committee in order to eliminate the points of difference.

Without doubt, Senator Nelson, who introduced the proposed amendment, did so without any purpose of restricting the physician in his practice or of placing any unnecessary or burdensome regulations on the medical profession. The object of the amendment, in Senator Nelson's mind, is obvious. It is intended to require a record of all habit-forming drugs dispensed by physicians, in order that all opium, morphin or cocain preparations can be checked and their final disposition traced. While it would undoubtedly be burdensome and require a considerable amount of unnecessary work for the practicing physician to keep a record of all persons to whom he administered any drugs containing opium, morphin or cocain, this would hardly be a valid objection to the provision, provided it could be shown that a commensurate advantage accrued to the public in the form of protection of life and health and the prevention of the formation of drug habits. Aside from annoyance and added work, the medical profession, as such, has nothing to lose by the adoption of such an amendment. Its adoption, however, would seriously affect the public health and endanger the well-being of the individual patient, in that it would tend to prevent a physician from dispensing or distributing to his patients any of the drugs named. Any interference with the liberty of the physician to prescribe or administer such drug preparations as the patient may need can only have one of two effects: Either the patient will fail to receive such drugs as his condition may require at the hands of the physician, or the patient will secure such drugs in other forms, independent of the physician, and will take them on his own responsibility. If the physician is allowed only to "administer" these preparations in person rather than to dispense or prescribe them, then it can only mean that the physician will have to call more frequently on the patient in order to comply with the law, and that the expense for professional attendance will thereby be increased. If, on the other hand, the physician is not permitted to dispense or distribute to his patients those drugs enumerated in the bill, then the public will soon learn this fact and families will provide themselves with such preparations for use on their own responsibility. In either case the principal object of the bill, namely, the reduction and restriction of the illicit and improper use of habit-forming drugs, will not be in any way advanced.

BILL A LEGAL SUBTERFUGE

The Harrison bill as it passed the House was the result of long consideration and discussion. It is an effort on the part of the federal government to control, through its tax-levying power, traffic in a product, the use of which the government is seeking to restrict for moral and social reasons. The plan followed in this particular is somewhat similar to that in the case of the Esch phosphorus bill, which became a law last year, in which the use of white phosphorus for the manufacture of matches was practically prohibited by levying a tax which was so high as to be equivalent to prohibition. The federal government has no jurisdiction over the sale of either phosphorus matches or habit-forming drugs inside state boundaries. It can, however, under the guise of a tax-levying measure, prescribe the conditions under which such products shall circulate in interstate commerce. The regulation of industries or the correction of an evil by state legislation is notoriously slow and lacking in effectiveness on account of lack of uniformity in the state laws enacted. Federal legislation for the correction of an obvious evil is much preferable if it can be legally accomplished. The Harrison bill, however, like the Esch phosphorus law, is legally a subterfuge and as such presents marked difficulties in the formulation of effective provisions.

1. Detailed accounts of these bills appeared in THE JOURNAL, Jan. 25, 1913, p. 310, Aug. 2, 1913, p. 360, and Jan. 24, 1914, p. 316.

PHYSICIAN IN FAVOR OF DRUG RESTRICTION

The medical profession, both as individuals and as a body, strongly favors national legislation for the correction of the improper sale and use of habit-forming drugs. No one knows better than the conscientious physician the harm done to the individual and the community by the use of opium and cocain. Every reputable and honorable physician will heartily endorse and enthusiastically cooperate in the enforcement of any law which will prevent the improper use of these drugs, of enormous benefit to suffering humanity when properly administered by scientifically educated men, but of terrible destructiveness when used without justification or proper supervision. No class of men will so heartily cooperate in enforcing such a law as will the reputable physicians of the country; none is so vitally necessary for its successful administration. To place an unnecessary and ineffective burden of administrative detail on the very class through whose cooperation the enforcement of the measure must come, is not only unwise but seriously impairs the successful accomplishment of the purposes of the bill. It is difficult to see how such a provision as that contained in Senator Nelson's amendment could be enforced.

KILLING A BILL BY IMPOSSIBLE AMENDMENTS

It has often occurred that the opponents of legislation when unable to defeat a measure by open attack have killed the bill by amendments seemingly good but designed to arouse antagonism against the whole measure or to make the law ineffective by introducing an unenforcible provision. There is no question that the opposition to this bill, as in many other instances of reformatory legislation, is vitally interested in preventing the restriction of the sale and use of habit-forming drugs largely on account of the large revenues derived from their illegitimate use. These interests would like something on which to base the statement that the medical profession is opposed to the regulation of the sale and use of habit-forming drugs. If professional opposition could be aroused by the introduction of some unnecessary and hampering restriction on physicians, whether or not the restriction was important to the success of the bill, the chances of defeating the bill would be greatly increased. Such tactics have been successfully used in other campaigns.

We feel sure that Senator Nelson had no such object in introducing this amendment. That it would work out practically in this way seems clear. Requiring practicing physicians to keep a separate record would only be burdensome to physicians and would in no way increase the effectiveness of the law. As the plain object and methods provided for in the bill as it passed the House are seriously impaired and confused by the Senate amendment, it is earnestly to be hoped that this amendment will not be pushed to adoption in the Senate, but that the bill, which in various forms has been repeatedly before Congress for the last five or six years, may become a law practically as it passed the House. Even in this form there will probably be difficulties in interpreting and administering it. Probably further amendments and modifications will be necessary, but as the bill passed the House, it represents the best form in which legislation on this difficult and perplexing subject has yet been framed.

Let it be clearly understood that the medical profession, the American Medical Association and THE JOURNAL of the American Medical Association are in hearty sympathy with the general object of the Harrison bill, namely, the restriction of the sale and use of habit-forming drugs to the minimum required for the proper treatment of human ailments. It is in the hope that this object may be most successfully accomplished and that the law as enacted may be one that is practicable and capable of enforcement, that THE JOURNAL expresses the hope that the amendment introduced by Senator Nelson may not be made a part of the finally enacted law.

Study of Medical History.—"How true it is that in reading this history one finds modern discoveries that are anything but discoveries, unless one supposes that they have been made twice."—Dujardin: Histoire de la Chirurgie, Paris, 1774.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARKANSAS: Little Rock, May 12. Sec., Dr. W. S. Stewart, Suite 404 Citizens Bk. Bldg., Pine Bluff. Homeopathic: Little Rock, May 12. Sec., Dr. I. J. Brooks, 219 East 19th St., Little Rock. Eclectic: Little Rock, May 12. Sec., Dr. C. E. Laws, Ft. Smith.

CANADA: Alberta, April 24. Dr. Cecil E. Race, Registrar of the University of Alberta, Edmonton.

ILLINOIS: Coliseum Annex, Chicago, May 12-14. Sec., Mr. Amos Sawyer, Springfield.

LOUISIANA: New Orleans, May 4. Homeopathic Board, Sec., Dr. Edward Harper, 702 Macheca Bldg., New Orleans.

MASSACHUSETTS: Boston, May 12-14. Sec., Dr. Walter P. Bowers, Room 159, State House, Boston.

NEBRASKA: Lincoln, May 27. Sec., Dr. H. B. Cummins, Seward.

NEVADA: Carson City, May 4. Sec., Dr. Simeon L. Lee, Carson.

NEW YORK: May 19-22. Chief of Examinations Division, Mr. Harlan H. Horner, Department of Education, Albany.

TENNESSEE: Memphis, Nashville and Knoxville, first week in May. Sec., Dr. A. B. DeLoach, Memphis.

WEST VIRGINIA: Charleston, April 21. Sec., Dr. S. L. Jepson, 81-12th St., Wheeling.

Virginia Board Elects Officers

At a meeting of the Virginia State Board of Medical Examiners held recently, the following officers were elected: president, Dr. R. S. Martin, Stuart; vice-president, Dr. J. E. Warriner, Richmond, R. F. D. No. 4; secretary-treasurer, Dr. J. N. Barney, Fredericksburg. The former secretary, Dr. Herbert Old, could not accept reelection since he expects to reside out of the state.

Connecticut Homeopathic Report

Dr. Edwin C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the special written examination held at Norwich, Jan. 4, 1914. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. One candidate, a graduate of the New York Homeopathic Medical College and Hospital in the year 1913, was examined and passed with a grade of 83. One candidate, a graduate of the New York Homeopathic Medical College and Hospital in the year 1902, was granted a license through reciprocity with New York.

Indiana January Report

Dr. W. T. Gott, secretary of the Indiana Board of Medical Registration and Examination, reports the written examination held at Indianapolis, Jan. 12-14, 1914. The number of subjects examined in was 16; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 12, including 2 osteopaths, of whom 11 passed, including 2 osteopaths, and 1 failed. Twenty-three candidates were licensed through reciprocity. The following colleges were represented:

PASSED College	Year Grad.		Per Cent.
Bennett Medical College	(1913)		89.8
Chicago College of Med. and Surg.	(1913)	87,	90.2
Northwestern University Medical School	(1912)		84
University of Illinois	(1913)		83.5
University of Louisville	(1913)		76.1
St. Louis University	(1913)		85.7
Miami Medical College	(1902)		84
University of Athens, Greece	(1904)		84.3
FAILED			
Hahnemann Med. College and Hosp. of Chicago	(1913)		71.1

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Medical College of Georgia	(1911)	Georgia
Bennett Medical College	(1912)	Michigan
Chicago College of Medicine and Surgery	(1911)	Illinois
Chicago College of Physicians and Surgeons	(1911)	Illinois
Jenner Medical College	(1906, 2)	Illinois
Hahnemann Med. Coll. and Hospital of Chicago	(1911)	Tennessee
Northwestern University Medical School	(1903)	Illinois; (1910) Illinois; (1911) Illinois.
Rush Medical College	(1910)	Missouri; (1911) Illinois
Kansas Medical College	(1905)	Kansas
Hospital College of Medicine, Louisville	(1906)	Kentucky
University of Louisville	(1911)	Kentucky
Johns Hopkins University	(1910)	Maryland

University of Maryland	(1909)	Maryland
Saginaw Valley Medical College	(1899)	Michigan
University of Michigan, Dept. of Med. and Surg.	(1913)	Michigan
St. Louis University	(1912)	Missouri
Cornell University	(1906)	Ohio
Medical College of Ohio	(1898)	Kentucky
Western Reserve University	(1898)	Illinois

Iowa January Report

Dr. Guilford H. Sumner, secretary of the Iowa State Board of Medical Examiners, reports the written examination held at Des Moines, Jan. 6-8, 1914. The number of subjects examined in was 8; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 14, of whom 13 passed and 1 failed. Three candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
Bennett Medical College	(1906)	78.1
Chicago College of Med. and Surg. (1911) 77;	(1913)	88.6
Northwestern University	(1912)	87.7
Rush Med. College (1898) 93.7; (1912) 86.5, 93;	(1913)	87
University of Illinois	(1912) 86.2 (1913)	92.2
Keokuk Med. Coll., Coll. of Phys. and Surgs.	(1906)	77.9
St. Louis College of Physicians and Surgeons	(1910)	78.2
University of Innsbruck, Tyrol, Austria	(1910)	80.2

FAILED

St. Louis College of Physicians and Surgeons	(1906)	70

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Indiana Medical College	(1906)	Indiana
John A. Creighton Medical College	(1911)	Nebraska
Lincoln Medical College	(1908)	Nebraska

Missouri Reciprocity Report

Dr. J. A. B. Adcock, secretary of the Missouri State Board of Health, reports that 16 candidates were licensed through reciprocity from Jan. 1 to Feb. 27, 1914. The following colleges were represented:

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Howard University	(1912)	Kansas
National Medical University, Chicago	(1896)	Illinois
Medical College of Indiana	(1905)	Indiana
University of Kansas	(1907) (1910) (1912)	Kansas
Hospital College of Medicine, Louisville	(1898)	Kentucky
Kentucky School of Medicine	(1890) Kansas (1900)	Kentucky
University of Louisville	(1910) (1912)	Kentucky
Boston University	(1910)	Illinois
Johns Hopkins University	(1910) (1911)	Maryland
Lincoln Medical College	(1907)	Nebraska
Jefferson Medical College	(1910)	Penna.

New Mexico January Report

Dr. W. E. Kaser, secretary of the New Mexico Board of Health and Medical Examiners, reports the written examination held at Santa Fe, Jan. 12, 1914. The number of subjects examined in was 13; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, of whom 2 passed and 2 failed. Ten candidates were licensed on credentials and 3 were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
University of Nashville	(1903)	81
Fort Worth School of Medicine	(1910)	92

FAILED

American Medical College	(1913)	70.6
University of Tennessee	(1913)	73.6

LICENSED ON CREDENTIALS

Denver and Gross College of Medicine	(1905)	
College of Physicians and Surgeons, Chicago	(1905)	(1906)
University of Louisville	(1907)	
Harvard Medical School	(1870)	
Columbia Univ., Coll. of Phys. and Surgs., N. Y.	(1903)	(1911)
New York Homeo. Med. Coll. and Hosp.	(1913)	
Medico-Chirurgical Coll. of Philadelphia	(1899)	
National School of Medicine, Mexico	(1885)	

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
Eclectic Medical College, Cincinnati	(1905)	Oklahoma
University Medical College, Kansas City	(1908)	Oklahoma
Eclectic Medical College, Kansas City	(1900)	Oklahoma

Book Notices

SCHOOL HEALTH ADMINISTRATION. By Louis W. Rapeer, M.A., Ph.D., New York Training School for Teachers. Cloth. Price, $2.15. Pp. 360. New York: Teachers College, Columbia University, 1913.

MEDICAL AND SANITARY INSPECTION OF SCHOOLS. For the Health Officer, the Physician, the Nurse and the Teacher. By S. W. Newmayer, A.B., M.D., in Charge of the Division of Child Hygiene, Bureau of Health, Philadelphia. Cloth. Price, $2.50 net. Pp. 318, with 85 illustrations. Philadelphia: Lea & Febiger, 1913.

These two books should be in the hands of every public health officer and medical school inspector. One may not agree with all the conclusions of the authors, but they are a distinct contribution to the literature of medical school inspection, both on account of the information contained and the personal views advanced. Rapeer's book is naturally stronger on the educational side since he approaches the problem from the point of view of a teacher rather than from that of a physician. His purpose is to present to the reader what American cities are doing for national health and vitality through the public schools, and how this work may be made more efficient. To the writer's extensive personal experience is added a study of data collected by the Child Hygiene Department of the Russell Sage Foundation, embracing over one thousand graded school systems. The first part of the book discusses the national and school health problem, considering the public school health situation as a part of the general national problem of public health and the prevention of avoidable diseases. The second part takes up the specific question of how educational hygiene is being promoted in twenty-five of our cities, discussing the question under the heads of "Administration"; "Nature and Efficiency of the Work Done"; "Ailments from Which Public Schoolchildren Suffer"; "Special Phases of Medical Inspection in Different Cities," and "Physical Education for the Improvement of the Physical Condition of Schoolchildren." The third and last part of the book is given to an outline of an ideal plan of administration, which can be used as a model, containing as it does the best methods which have been developed in different cities.

Dr. Newmayer naturally discusses the subject from the point of view of the inspector and physician rather than from that of the superintendent and educator, considering the subject under the heads of "Administration," "Building and Grounds," "Infectious, Contagious and Communicable Diseases" and "Physical Defects." The author endeavors to prepare a guide for physicians, nurses and teachers which can be followed in the physical examination of schoolchildren. Dr. Newmayer's book will appeal more to the medical inspector, while Rapeer's will be more appreciated by the superintendent or public school member. Both of these volumes, however, can be read with profit by all those interested in the subject. A considerable table of references to recent authorities is to be found in each.

WORKMEN'S COMPENSATION. Report on Operation of State Laws. Investigation by Commission of the American Federation of Labor and the National Civic Federation. Commission's Findings. Views of Employers and Workmen, Digest of Laws, Rules of State Boards of Award. Paper. Senate Document No. 419, 63d Congress, 2d Session. Washington: Government Printing Office, 1914.

The Commission of the American Federation of Labor and the National Civic Federation on the workmen's compensation laws have reported as a senate document on the various states which have enacted such legislation. It was the purpose of the commission to ascertain the facts with regard to the operation of the workmen's compensation laws rather than to report on theories or to make recommendations. The lack of complete statistics regarding the working of the laws in all of the states has prevented the most accurate conclusions, but it is believed the study will prove valuable to all of the states which have not yet enacted such laws, and also to those having such laws as affording a basis for further amendment. The commission found that more than five million workmen are now operating under the compensation laws in the various states and several million more will soon come under the provisions of the statutes already enacted but not yet in force. One of the features which has interfered with the

highest possible benefit of these compensation laws has been the lack of adequate appropriations for their enforcement. The commission says, that in those states that have had experience under the law, general satisfaction is given both to employer and employee, and the opinion is generally expressed by those interviewed, that the principle of compensation will soon be the ruling doctrine throughout the country. The laws have improved the relations existing between employer and employee and have had a marked effect on accident prevention by calling attention to the subject and exciting an interest in it. It is said that the difficulties feared by some employers and some workmen that the laws would lead to fraud, deception and malingering on the part of employees and discrimination by employers against certain classes of workmen, have not materialized, but that the laws are easy of administration and fair in their operation.

This report is highly interesting as concerning a radical departure in legislation having to do with the relation of employer and employee. Probably the most salutary influence of such legislation has been the actual saving of life and limb in industrial work through the better safeguards thrown around the workers and the greater care on the part of the workmen themselves, which has been stimulated by the requirements of these laws.

ARBEITEN AUS DEM PHARMAZEUTISCHEN INSTITUT DER UNIVERSITÄT BERLIN. Herausgegeben von Professor Dr. H. Thoms, Direktor des Pharmazeutischen Institutes der Universität Berlin. Tenth Edition. Cloth. Price, 8.50 marks. Pp. 220. Berlin: Urban and Schwarzenberg, 1913.

This volume is the annual report of the pharmaceutical department of the University of Berlin, in charge of Prof. Dr. Thoms, corresponding member of the Association's Council on Pharmacy and Chemistry. The activities of the institute comprise the instruction of pharmaceutical students as well as general lectures including, for instance, one given to justices and state attorneys dealing with milk and milk products. The institute also has a botanic garden in which it is reported the growing of Japanese peppermint was carried out with considerable success, though now the cultivation has been transferred to Germany's African colonies, the institute still controlling the experiments and studying the production of menthol and the yield. In the main, the report is devoted to an account of the scientific work done at the Pharmaceutical Institute, much of which has appeared in current publications during the year. The published work represents a large number of valuable pharmaceutical and chemical investigations, including the examination of a considerable number of proprietary medicines both of the synthetic and of the patent medicine order. As illustrative of the institute's broader scope there appears a detailed account of work in connection with the recent conduct of the Scharmach wood alcohol poisoning prosecution in Berlin. From this it appears that the prosecution depended on the institute for the scientific evidence required in this case.

The report is a credit to the Pharmaceutical Institute of the University of Berlin and to its director, Thoms. It should serve as a suggestion to American universities for the upbuilding of their pharmacy departments.

LONDON PUBLIC HEALTH ADMINISTRATION, A Summary Showing the Principal Authorities, with Their Origin, Services and Powers. By W. McC. Wanklyn, B.A., M.R.C.S., L.R.C.P., Fellow of the Royal Society of Medicine. Cloth. Price, $0.90 net. Pp. 59. New York: Longmans, Green & Co., 1913.

This is a little pocket-manual presenting in tabulated form the principal authorities concerned in the administration of public health in the city of London, with an account of their origin, services and powers. It is intended to present a synopsis of London public health administration in as conveniently condensed and simple a form as possible for foreign visitors. It contains a list of the principal London public health authorities with an account of their origin, a list of the various public health services and a table of the most important public health statistics arranged chronologically. A convenient little addition is the fifteen or twenty blank pages in the back of the book for notes.

Miscellany

The Migratory Habit of the Larvae of House-Flies

In Bulletin 14 of the Department of Agriculture, Bureau of Entomology, Robert H. Hutchinson records some interesting observations on the habits of the larvae of the house-fly which may serve as a basis for fly elimination. Levy and Tuck announced as a biologic fact that the house-fly does not pupate in manure if the full-grown larvae can find any means of reaching and entering the earth; but Hutchinson, in an examination of the ground after the removal of heaps of manure, found only a small percentage of larvae beneath the surface, though the nature of the ground would not have prevented such migration, if that were the larval habit. In accordance with a number of other observers, he finds that the larvae manifest a migratory tendency just before pupation, no doubt initiated in response to internal stimuli incident to the maturing of the larval stage and preparatory to the pupal stage. The course and direction of the migration are determined largely by external stimuli. The larvae seem to flee from the moister regions of the manure heap to the comparatively dry regions at its edges which still are protected from the light. If no such dry places are to be found in the manure they will pupate in the ground or in cracks and crevices, under boards or stones, etc. The teleologic explanation of this is that it is an adaptation to afford an easy path to freedom for the adult fly, while allowing for the quickest possible expansion and drying of the wings. Levy and Tuck caught the larvae by taking advantage of this habit; they constructed a maggot-trap by boring holes in or placing wire screen over the bottom of a barrel containing fly-infested manure, through which the larvae, endeavoring to escape, were caught in a tub placed beneath the barrel. Hutchinson modified this experiment by placing water in the pan or tub in which the larvae dropped from the manure receptacle above, and covered the whole apparatus with a fly-proof screen having fly-traps in the top to catch any of the insects that might mature and emerge in that direction. The screen also prevented reinfestation of the manure, which was thoroughly sprinkled with water each day. By this means about 98 per cent. of the larvae were caught and destroyed in the pan containing the water. In another experiment about 99 per cent. of the larvae were destroyed before they reached the pupal stage. These percentages seem to demonstrate the habitual nature of the migration and the feasibility and efficiency of the maggot-trap in preventing fly propagation in manure. It has been found by Hutchinson that a given lot of manure under favorable conditions will rarely contain larvae after ten or twelve days.

Clinical Diagnoses and Necropsy Findings in Bellevue

Part III of the Report of the Committee on Inquiry into the Departments of Health, Charities, and Bellevue and Allied Hospitals of New York contains some interesting comparisons of the clinical diagnoses and the necropsy findings in the cases of patients dying in the hospital. The comparison was made from the records by Dr. Horst Oertel, formerly chief pathologist of the Russell Sage Pathological Institute, in 388 cases in which post-mortems were held. In 87 of these, or 22.4 per cent., the clinical diagnoses were confirmed; in 116, or 29.9 per cent., the diagnoses were correct but the necropsies disclosed additional important lesions; in 54, or 13.9 per cent., the clinical diagnoses were partially correct but the necropsies revealed other important lesions; in 107, or 27.6 per cent., the clinical diagnoses were not confirmed, in 24, or 6.2 per cent., no clinical diagnoses were recorded in the death records. The clinical diagnoses were therefore confirmed in 52.3 per cent. of the cases and not confirmed in 47.7 per cent. The conclusions drawn by those responsible for the report are "not that the findings of the attending physicians at Bellevue are carelessly made and recorded, but rather that too great reliance is placed on inexperienced house physicians and interns, and also that the current knowledge necessary to make clinical diagnoses which shall approach accuracy is insufficient."

By this is meant that "medical knowledge is not sufficiently advanced to enable physicians to diagnose with great degree of accuracy."

In this connection attention is called in the report to the comparatively small number of necropsies held in Bellevue Hospital. The ruling of the commissioner of charities that under the law all unclaimed bodies must be turned over to the medical colleges for anatomic instruction is largely responsible for this. Under this ruling the number of necropsies held on unclaimed bodies diminished from 263 in 1907 to 102 in 1911, and in 1912 only 12 necropsies were held with such material. Of the necropsies held on bodies by consent of relatives or friends, the number increased from 143 in 1907 to 423 in 1912. This means that necropsies were held on about 10 per cent. of those dying in the hospital, while in the University College Hospital in London, necropsies are performed on 84 per cent., and in the Allgemeines Krankenhaus, Vienna, they amount to 99.9 per cent., and in most of the German hospitals to at least 90 per cent. In the Boston City Hospital they amount to about 9 per cent.; in the Philadelphia General Hospital to 10 per cent. In Johns Hopkins Hospital and some others the percentage is higher, amounting in the hospital named to 62.8 per cent. of the deaths. The committee expresses the opinion that the greater effectiveness of European teaching is largely due to the more adequate post-mortem study.

Antituberculosis Work in Pennsylvania

Pennsylvania is one of the foremost states in caring for its consumptives. In addition to three large and well-equipped sanatoriums there are 114 dispensaries located in towns and cities in the state. The sanatoriums are located at Mont Alto, opened in 1907; Cresson, opened in January, 1913, and one at Hamburg in course of construction. At Mont Alto since 1907 about eleven thousand patients have been treated. Of the 9,925 persons discharged, 329 have been apparently cured, and 2,066 have had the disease arrested. These two classes comprise about 28 per cent. of the total admissions. Nearly 40 per cent., 3,896, have left the institution with their condition improved. At Cresson since the opening of the sanatorium over 1,000 persons have been treated. Every county in the state has at least one dispensary where any person applying who properly fills out the blanks may receive attention. The staff of each dispensary consists of a physician in charge and a nurse, with additional nurses and physicians as required. One of the duties of the nurse is to visit the homes in which there are patients with tuberculosis, and during 1913, 137,858 of such visits were made in the entire state. In a circular letter addressed to physicians, the State Board of Health urges the use of the dispensaries and sanatoriums by tuberculous patients. The state also maintains a laboratory in Philadelphia where specimens of sputum, as well as of the secretions and excretions in other diseases than tuberculosis, may be sent for examination. A booklet describes the laboratory and its work and gives directions for preparing specimens for submission to the laboratory. In addition, in the propaganda against tuberculosis a circular has been prepared for general distribution, giving advice and instruction as to the manner of life and care to be taken by tuberculous persons in order to obtain a cure and to prevent the spread of the disease among the well. A list of the tuberculosis dispensaries is also supplied.

First Aid to the Injured

A lecture on this subject, delivered by W. L. Brown, division surgeon of the El Paso and Southwestern Railway System, to the employees and approved by F. E. Shine, chief surgeon, has been printed in a pamphlet form for circulation as one of the publications of the safety bureau of the road. It contains in simple language directions as to what fellow employees should do in case one of their number is injured. It is first emphasized that some one should immediately take charge and issue directions as to what should be done before the arrival of the surgeon or before removal of the patient to a hospital or elsewhere. Methods of stopping hemorrhage are explained and illustrated, and emphasis is laid on the fact that this must be done in such manner as not to cause gangrene. Warning is given that the wounded person should be kept lying flat and stimulants other than coffee should not be given. Open wounds are not to be touched with the hands and are to remain dry. Directions are given for devising splints and supports from materials at hand in case of fractures and mangling, the improvising of stretchers, etc. Suggestions are given for first aid in burns and eye injuries, and the equipment of an emergency box of small dimensions to be kept at hand in all departments of railroad work. The recommendations and instructions in the pamphlet are extremely practical and would serve almost equally among any class of workmen other than railroad employees.

Open-Air Treatment of the Insane

The *Institution Quarterly*, a publication of the Public Charity Services of Illinois, for the last quarter of 1913, contains a tabulated statement of the results of an experiment in the Elgin State Hospital in the open-air treatment of the anemic and tuberculous insane. The hospital has a frame, one-story sanatorium building with an open south front. The cottage, which has a capacity of about forty patients, is built and arranged according to the latest ideas for sanatoriums. May 1, 1913, a number of the inmates, men and women, were transferred to this building. Their weights were taken on admission. September 30, nineteen of the women and seven of the men were still present and their weights were recorded. The smallest gain was found to be 4 pounds and the greatest 51½ pounds, the average gain in weight being about 20 pounds.

No difficulty was experienced in maintaining supervision over these persons, and there was little or no attempt at escape. This sanatorium was erected at a cost of $500 per bed and is found to be the most comfortable, the easiest maintained and supervised, as well as the best-ventilated and heated ward in any institution in Illinois, and the patients have shown marked improvement, physically and mentally.

Casein Obtained by Electrolysis

In *Daily Consular Reports*, summarized by the *Scientific American*, Consul W. H. Hunt, stationed at St. Etienne, France, reports on recent developments in the production and industrial uses of casein. Casein, which is the principal albuminoid matter of milk, is now obtained by electrolysis, according to the following recently invented process: In the middle of a large vat full of skimmed milk heated to a temperature of 80 C. (176 F.), a porous vessel is placed containing a 5 per cent solution of sodium hydroxid; an iron cathode is plunged into the soda, and a rod of carbon, serving as an anode, into the milk. An electric current sets free the phosphoric acid contained in the milk, and the casein precipitates. As compared with the method of obtaining casein by the use of acids or rennet, the cost of this process is very low, the yield is greater, and the casein produced contains no foreign ingredients. Vegetable casein, now produced on an extensive scale from the soya bean, can be put to the same uses as animal casein. The principal use of casein is in the manufacture of galalith (milk stone), used as a substitute for ivory, tortoise-shell, celluloid, etc. Penholders, frames, purses, phonograph disks, and a great variety of other articles are now made of galalith. It is also used as a chemical fertilizer. Several other casein products have recently been introduced.

New Diluent for Cow's Milk.—Dr. W. G. Boorsman of the Pharmacological Laboratory, Java, reports on the use for the dilution of cow's milk in infant-feeding of an emulsion of seeds of the *Canarium commune* L., a tree which is common in the tropical parts of Asia and bears the Malay name of *Kanari*. The tree is cultivated in some places. The seeds are triangular in shape and resemble the almond. They must be used when ripe or nearly ripe. This emulsion prevents the coagulation of casein in large lumps. The dried seeds contain about 75 per cent. oil and 14.5 per cent. albuminous matter, besides some soluble carbohydrate, etc.—*Indian Med. Gaz.*

Medicolegal

Construction of Workmen's Compensation Act with Reference to the Furnishing of Medical and Surgical Treatment

(City of Milwaukee vs. Miller (Wis.), 144 N. W. R. 188)

The Supreme Court of Wisconsin holds that the legislative requirement in the workmen's compensation act of that state that the employer shall bear the burden of reasonably necessary medical and surgical treatment of his injured employee was not intended as a charity to the one, or as a penalty to the other, but as a recognition of the economic truth that such expense is a legitimate element in the cost of production and should be placed on the product as directly as practicable, using the employer as a necessary first step in that regard.

The amount allowed for reasonable expenses of medical and surgical treatment should be the fair value of the service as such—neither more nor less because of the employer being liable therefor. The burden of proof to establish the reasonableness of such charges is on the employee, and, in case the proof is insufficient, the claim should be proportionately reduced. The reasonableness of an employee's claim being disputed by credible evidence and not supported by other than opinion evidence of the person most interested, the court should apply ordinary common sense and experience to the matter and fix the amount at such sum as appears reasonable; and, where the claim is obviously exorbitant, should not allow it as a whole, however strongly supported it may be by evidence from the mouth of the interested party.

The right of the employer under the workmen's compensation act to furnish reasonably necessary medical and surgical treatment and his liability to the employee for reasonable expense incurred by him, in case the employer unreasonably neglects or refuses to make the proper provision, by necessary implication means that the employer must have reasonable opportunity to furnish the services if the employee is to be entitled to obtain such treatment at the expense of the employer. It also means that the employer must have a reasonable time to provide such services after notice of the need therefor; but an injured employee may obtain medical and surgical treatment at the expense of his employer in the interim between the happening of the injury and the time for notice to the employer of the employee's needs.

Case in Which Father Not Liable for Medical Services Rendered to Son

(Sassaman vs. Wells (Mich.), 144 N. W. R. 478)

The Supreme Court of Michigan reverses, without granting a new trial, a judgment recovered by the plaintiff for medical services rendered to the defendant's son, 19 years of age, while the latter was attending school a few miles away from home, in the same county. The court says that two questions were submitted to the jury: (1) Was the defendant's son emancipated when the debt was contracted? (2) Did the plaintiff charge the account to the son or to his father? These the jury answered in the plaintiff's favor. For a time, his father had paid the son wages and settled with him when he determined, contrary to his father's wishes, to go away to school. While he was away, his father contributed nothing to his support, and did not know of his son's illness or that the plaintiff was attending him. The son's ailment was a private one, which he would naturally desire to keep from his parents. The value of the services was not questioned.

The court is of the opinion that, without considering whether the son had been emancipated, or whether the plaintiff intended to hold the defendant responsible, the liability of the defendant was not established, and the jury should have been so instructed. It is manifest that the son had neither express nor implied authority to pledge his father's credit. The plaintiff made no express contract with the father, nor were the services rendered under circumstances from which, generally, a promise to pay would be implied. If the defendant was liable, it was because of some general moral or legal duty to provide necessaries for his son, failing in which a stranger might supply them at the parent's expense. There was some evidence of the real need for medical services; none of a failure of duty on the part of the father. Nor was there any exigency, such as the imminent peril of the son and his distance from home, to take the case out of the rule that parental duty must be neglected before a stranger may supply what the parent ought to supply, at the expense of the parent. The court takes notice that over the few miles lying between the place of the father's residence and where the son was, information could have been speedily conveyed to the father.

Lack of Skill or Bad Judgment of Surgeons No Defense to Crime

(State vs. Gabriella (Ia.), 144 N. W. R. 9)

The Supreme Court of Iowa affirms a conviction of manslaughter although it was contended for the defendant that the death of the man he shot resulted from a surgical operation negligently performed. The court says that immediately after the shooting the man shot was taken to a hospital where he was cared for to the time of his death. Because of his condition as the result of the wound, the hospital surgeons performed an operation on him with a view of improving his condition and saving his life. The operation, however, was not successful and the patient died within a few hours. At the trial the defendant offered testimony to show that the operation was not performed in a manner in which a reasonably prudent surgeon would perform it. But all proffered testimony along that line was rejected by the trial court. There was no claim that the man had recovered from his wound at the time of the operation, or that there was any evil intent in the performance of the operation, or that it was performed for any other purpose than in a good-faith attempt to save the life of the patient. Lack of skill or bad judgment or mere negligence in any form on the part of the surgeon will not avail the slayer to protect him against the final consequences of his wrongful act.

Death of an Alcoholic From Pneumonia After Being Stabbed —Expert Testimony

(State vs. James (Minn.), 144 N. W. R. 216)

The Supreme Court of Minnesota says that the defendant inflicted knife-wounds on one Miller, one of the wounds being a deep stab which penetrated the left lung. Forty-eight hours after the assault Miller developed pneumonia, and died from that disease a week later. Miller was a large, heavy man, in the prime of life. He was in good health, except for alcoholism. The pneumonia attacked the left lung, and did not affect the other. One physician gave it as his opinion that the pneumonia was caused by infection through the wounds, particularly the stab that punctured the left lung. He testified that this was not an unexpected result in wounds of this character, though not a necessary result. He based his opinion that the wound caused the pneumonia in this case, on the fact that the disease attacked and was confined to the lung that was pierced by the knife, the fact that it developed at a time after the wound when it was usual for pneumonia to manifest itself, and the fact that the patient did not have the preliminary symptoms that ordinarily accompany the beginning of pneumonia, acquired by inhaling the germs; that is, a chill and a feeling of lassitude. Another physician expressed himself as unable to give an opinion whether the germ was taken into the lungs by inhalation; or whether it was introduced into the lung by the knife of the defendant. The court holds that the evidence did not leave the cause of death a matter of speculation or conjecture, but was sufficient to justify the conclusion that the pneumonia germ was not inhaled, but entered the lungs on the knife-blade of the defendant or through the puncture in the lung made by the knife, and therefore that the defendant caused the death and was guilty of murder.

This was not a case in which the experts disagreed, but in which one gave an opinion, and the other was unable to

do so. Neither was it a case in which the jury could consider nothing but the opinions of experts in reaching its conclusion. The case concerned a matter of science or specialized art, in so far as it involved an inquiry into the causes and symptoms of pneumonia, and was a proper one for the opinions of experts as to the cause of the disease in the particular case, after the foundation of expert knowledge and acquaintance with the facts was laid. But the question was not one on which there could be no light except the expert opinions. The facts already mentioned were such as the jury could consider in reaching a decision, together with the expert evidence.

It was not claimed, and could not be, that alcoholism was a cause of the pneumonia. It was a condition which made it easy for the bacillus to do its work, but not a cause. That alcoholism made a fatal result more probable was not against the conclusion that the defendant caused the death, any more than if blood-poisoning had followed the wounds, and it was asserted that Miller's being "saturated with alcohol" made it impossible to resist the disease.

Society Proceedings

COMING MEETINGS

American Medical Association, Atlantic City, June 22-26.

Alabama Medical Association, Montgomery, April 21-24.
Am. Assn. of Genito-Urinary Surgs., Stockbridge, Mass., May 15-16.
American Dermatological Association, Chicago, May 14-16.
American Gynecological Society, Boston, May 19-21.
American Laryngological Association, Atlantic City, May 25-27.
American Medico-Psychological Association, Baltimore, May 26-29.
American Neurological Association, Albany, May 7-9.
American Ophthalmological Society, Hot Springs, Va., May 12-13.
American Otological Association, Atlantic City, May 27-28.
American Pediatric Society, New London, Conn., May 26.
American Society of Tropical Medicine, Boston, May 29-30.
American Therapeutic Society, Albany, May 29-30.
Arizona Medical Association, Tucson, April 21-22.
Arkansas Medical Society, Eldorado, May 19-22.
Association of American Physicians, Atlantic City, May 12-13.
Connecticut State Medical Society, New Haven, May 20.
Florida Medical Association, Orlando, May 13-15.
Illinois State Medical Society, Decatur, May 19-21.
Iowa State Medical Society, Sioux City, May 13-15.
Kansas Medical Society, Wichita, May 6-7.
Louisiana State Medical Society, New Orleans, April 20-23.
Maryland Medical and Chir. Faculty, Baltimore, April 28-30.
Missouri State Medical Association, Joplin, May 12-14.
Nat. Assn. for Study and Prev. of Tuberculosis, Washington, May 7-9.
National Association for the Study of Epilepsy, Baltimore, May 25.
Nebraska State Medical Association, Lincoln, May 12-14.
New Hampshire Medical Society, Concord, May 13.
New York State Medical Society, New York, April 28-30.
North Dakota State Medical Association, Grand Forks, May 13-14.
Ohio State Medical Association, Columbus, May 5-7.
Oklahoma State Medical Association, Guthrie, May 12-14.
South Dakota State Medical Association, Watertown, May 26-28.
Texas State Medical Association, Houston, May 12-14.
West Virginia State Medical Association, Bluefield, May 13-15.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

April, VII, No. 4, pp. 253-336

1 *Incubation Period. No. 1—Serum Disease. D. M. Cowie, Ann Arbor, Mich.
2 *Tuberculosis of Lungs, Liver and Spleen, with General Glandular Enlargement in Child. J. S. Leopold, New York.
3 *Why Sodium Citrate Prevents Curdling of Milk by Rennin. A. W. Bosworth and L. L. Van Slyke, Geneva, N. Y.
4 *Gastric Digestion in Infants. M. Hahn, Washington, D. C.
5 Neurosis Chiefly Affecting Stomach and Muscles of Deglutition. A. A. Howell, Philadelphia.

1. Incubation Period. No. 1—Serum Disease.—The object of Cowie's first set of experiments was to determine in as many cases as possible the time at which specific oversensitiveness to horse-serum could first be demonstrated; in other words, the time that elapses from the first injection of horse-serum until antibodies are demonstrable by the intracutaneous test.

Thirty individuals whose ages varied from 6 months to middle adult life were sensitized to horse-serum by means of prophylactic injections of diphtheria antitoxin. Of these, seventeen were children and thirteen adults. Ninety-four per cent. reacted to the cutaneous test. One of the children was found to be refractory; that is, after repeated intradermal injections sensitization could not be demonstrated up to the tenth day of the experimental period. However, specific oversensitiveness was demonstrated in this case on the forty-first day. One adult did not remain long enough for specific sensitiveness to occur. One hundred per cent. of the adults responded to the test; 94 per cent. of the children. With the exception of one, all reacting cases remained sensitive throughout the first experimental period of eight to twelve days.

In the second series of experiments observations were made to determine how long an individual remains sensitive to an inoculation of horse-serum, and the factors influencing the reaction. Cowie found that an individual may remain very markedly oversensitive (allergic) for seven years. In two other cases seventeen months and two years, respectively, had elapsed since the antitoxin was given.

The third series of experiments consisted of observations made to determine if a small dose of horse-serum is sufficient to sensitize to the point of recognition by the intradermal test, and if so for how long. Typical oversensitiveness as recognized by the intradermal test was brought about in a child by at least 1 c.mm. of horse-serum ($\frac{1}{10}$ c.c.) without the provocative influence of successive injections, and the reaction continued over a period of seven days; the reaction occurred in all cases on the fourth or fifth day, as is the rule after the longer initial injection (5 to 10 c.c.); the reaction was equally as pronounced as it is after the larger injection at the same period of observation, and sensitization by means of a minute dose of horse-serum continues for 136 days.

Cowie divides the so-called incubation period of serum disease into three distinct stages—preallergic, allergic and hyperallergic, depending on the degree of reaction of the organism as a whole, all of which can be definitely determined. The duration of the preallergic stage is uninfluenced by the smallness of the dose of serum. The visible symptoms of serum disease are due to hyperallergy. The hastened and immediate reactions depend on quantitative reaction factors. The blood serum of a normal child recently injected with horse-serum, for the first time, when injected in small amount into a highly allergic child will induce the symptoms of serum disease as recognized by an immediate or a hastened reaction.

2. Tuberculosis of Lung, Liver and Spleen.—Leopold's chief object in reporting this case is to call attention to the difficulty of classification of tuberculosis combined with atypical changes in the lymphatic system, of which it is an example. Miliary tuberculosis of the lungs, liver and spleen is here combined with general glandular changes that closely resemble those found in the condition called "pseudoleukemia." The points of chief interest in this case were the enlargement of the liver, the great enlargement of the spleen, the ascites and the anemia with leukopenia. In making a diagnosis of the patient's condition the various forms of leukemia, a new growth, lues, tuberculosis, pseudoleukemia and Banti's disease were considered. The blood-picture ruled out the various forms of leukemia. The smooth surface of the liver and of the spleen spoke against a new growth. Lues could be ruled out by the history and the course of the case as well as by the negative Wassermann reaction. The diagnosis by exclusion was therefore either tuberculosis, pseudoleukemia or Banti's disease.

In Banti's disease there is usually a much more severe anemia than was present in this case. The course of Banti's disease is as a rule of three to ten years' duration. There are frequently hemorrhages from the stomach and intestines, and during the end stages of the disease there is usually a positive test for urobilin in the urine. All of these conditions

were here absent. On the other hand, the rather acute onset, the short course of the disease, together with the remittent temperature and a positive v. Pirquet reaction pointed toward tuberculosis or pseudoleukemia. A positive diagnosis was not made.

3. **Why Sodium Citrate Prevents Curdling of Milk.**—Work previously done by the authors led them to test the matter by an experimental study of the action of sodium citrate on milk. They found that the addition of sodium citrate to normal milk increases the amount of soluble calcium in the milk, this increase resulting from a reaction between the calcium caseinate of the milk and sodium citrate, by which is formed sodium caseinate (or calcium-sodium caseinate) and calcium citrate. The reaction is reversible. The curdling of milk by rennin is delayed by the presence of sodium citrate; when there is added 0.400 gm. of sodium citrate per 100 c.c. of milk (equal to 1.7 grains per ounce), no curdling takes place. The curd produced by rennin in the presence of small amounts of sodium citrate (0.050 to 0.350 gm. per 100 c.c. or 0.20 to 1.5 grains per ounce) increases in softness of consistency as the amount of sodium citrate in the milk increases.

The results of this work indicate that at the point at which rennin fails to curdle milk, in place of the calcium caseinate of normal milk there is a double salt of calcium-sodium caseinate; this double salt, when rennin is added, is changed to a calcium sodium paracaseinate which, owing to the presence of the sodium, is not curdled. The practice of adding sodium citrate to milk at the rate of 1 to 2 grains of citrate per ounce of milk appears in their judgment to have a satisfactory chemical basis in the reaction between the sodium citrate and the calcium caseinate of the milk. The amount added is governed by the object in view, viz., whether it is desired to prevent curdling or only modify the character of the curd in respect to softness.

4. **Gastric Digestion in Infants.**—Ninety-four specimens of stomach contents from thirty-seven infants were analyzed by Hahn. He found that the determination of the hydrogen-ion concentration is the only rational method of measuring gastric acidity in infants. The hydrogen-ion concentration, $(H) = 1 \times 10^{-4}$, is the normal reaction of the stomach contents at the height of digestion for infants fed on ⅓ milk-cream and ⅔ milk. $(H) = 1.0 \times 10^{-5}$ is the optimum reaction for rennet and gastric lipase; pepsin is inert at this reaction. The important processes in the gastric digestion of infants are the coagulation of milk by rennet and the splitting of fat by gastric lipase; the peptic digestion of casein is unimportant for the infant. In infants from 1 to 4 months old fed on ⅓ cream-milk the lipase content increases with the age of the infant. In infants from 4 to 12 months old fed on ⅔ milk the content of all gastric ferments is greater than in infants from 1 to 4 months old on ⅓ cream-milk.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

March, I, No. 9, pp. 605-668

6 Epidemic of Paratyphoid Fever. A. N. Sinclair, Honolulu.
7 Growth of Filaria Embryos in Vitro. F. M. Johns and P. L. Querens, New Orleans.
8 Innocuous Bites of Malaria and Yellow Fever Mosquitoes During Daytime. E. Echeverria, San Jose, Costa Rica.
9 Health Survey. W. H. Deaderick, Hot Springs, Ark.

Archives of Ophthalmology, New Rochelle, N. Y.

March, XLII, No. 2, pp. 117-230

10 Experiments on Cultivation of So-Called Trachoma Bodies. H. Noguchi and M. Cohen, New York.
11 Results after Trephining. A. Knapp, New York.
12 Angioma of Lids and Brow. H. B. Lemere, Omaha.
13 Lenses for Refraction of Cataract Cases. D. N. Dennis, Erie, Pa.
14 Operative Treatment for Squint. E. Landolt, Paris.
15 Endogenous Gonorrheal Corneal Affections. F. Pincus, Cologne.
16 Occurrence of Cat-like Pupils in Man. R. Greeff, Berlin.
17 Progress of Ophthalmology. H. Koellner, Berlin, and others.

Bulletin of Lying-In Hospital of City of New York

January, IX, No. 3, pp. 151-247

18 *Treatment of Eclampsia. F. S. Newell, Boston.
19 Obstetric Technic for General Practitioner. J. W. Markoe, New York.
20 *Three Case Reports. A. B. Davis, New York.
21 *Treatment of Puerperal Streptococcemia with Intravenous Injections of Magnesium Sulphate. J. A. Harrar, New York.
22 *Treatment of Placenta Praevia by Cesarean Section. R. McPherson, New York.
23 Maternity Hospital Care for Woman of Moderate Means. G. W. Kosmak, New York.
24 Two Cases of Esophagotracheal Fistula. J. R. Losee, New York.
25 Work Done in Babies' Class from October 1, 1912, to September 30, 1913. E. L. Coolidge, New York.
26 Clinical Report of Work of First Division of Lying-In Hospital for Year 1912. J. A. Harrar, New York.

18. **Treatment of Eclampsia.**—The principal points in the treatment of eclampsia which Newell says will lead to a satisfactory results are first, prophylaxis, the early recognition and treatment of symptoms; second, venesection, with or without delivery according to the nature of the case; and third, the securing of elimination of all possible toxins through the intestinal tract, meanwhile using morphin, or, if preferred, veratrum viride, to lessen the tendency to convulsions until elimination of the toxins is under way. The mortality from eclampsia is sure to be high if the patients are not seen and treated till the development of convulsions, no matter what method of treatment may be carried out, whether medical or surgical, but if the process is recognized early and treated efficiently most cases are amenable to medical treatment. If, however, prompt amelioration of symptoms does not occur, delivery by the method best suited to the conditions present in the individual case should be carried out and followed by efficient after-treatment.

20. **Three Case Reports.**—Davis cites the following cases: (1) A case of intermittent and unilateral chyluria. The patient stated that she first noticed the change in her urine at about her fifteenth year, near the time of her first menstruation; that it was not constant in its appearance, but the chylous condition would be absent for years at a time, and would reappear after any indulgence in anger or emotion. Palpation has never revealed tenderness or enlargement of the left kidney. The chyluria was absent for several years, but reappeared at the death of her mother ten years ago, and was present for several months. It was present during the entire time of her first pregnancy, and for nine months thereafter. During and after her second pregnancy, it was absent. There has been no noticeable difference in the character of the night and day urine. Sept. 13, 1913, the urine had been clear for five days, and the general health was good. She was nursing her infant. (2) Acute dilatation of the stomach, following ventral fixation of the uterus, long labor. Low forceps delivery, recovery. (3) Myomectomy at the eighth week, pregnancy not interrupted. Normal delivery at term.

21 and 22. Abstracted in THE JOURNAL, Oct. 4, 1913, pp. 1320 and 1321.

Cleveland Medical Journal

March, XIII, No. 3, pp. 141-220

27 *Factors in Diagnosis and Treatment of Syphilitic Aortitis. W. T. Longcope, New York.
28 Dentition of Apes. T. W. Todd, Cleveland.
29 History of Physiology of Circulation. R. G. Pearce, Cleveland.
30 Radium. W. T. Corlett, Cleveland.
31 Treatment of Abscess of Nasal Septum. W. J. Abbott, Cleveland.

27. **Diagnosis and Treatment of Syphilitic Aortitis.**—Longcope claims that syphilitic aortitis is a common manifestation of tertiary syphilis, in this respect approaching in frequency tabes and paresis. It is, moreover, in many instances, associated with syphilis of the central nervous system. The diagnosis in most instances is first made after the appearance of aortic insufficiency, aneurysm or angina pectoris and when such symptoms as pain, paroxysmal dyspnea and evidences of slight heart failure have already appeared. Without these signs dilatation of the aortic arch is the most reliable evidence, though cases of non-syphilitic dilatation may occur presenting exactly the same clinical picture as syphilitic aortitis. A positive Wassermann reaction is, therefore, essential for an accurate diagnosis.

Treatment with salvarsan and mercury has rarely given more than temporary relief. The reason for this seems to depend at least in part on a number of factors. Owing to the danger of Herxheimer reactions, only small doses of salvarsan can be administered safely intravenously, though Hg seems to be without harm. Prolonged treatment is, therefore, required. In the second place, once symptoms have appeared, the life of the individual is very short, from 65 to 70 per cent. of the patients living only one or two years. To overcome this factor it is necessary to make the diagnosis early and institute treatment before irreparable damage has been done. And finally, the eradication of the disease, on account of the situation of the spirochetes, peculiarly protected from the blood-stream, is especially difficult. In an attempt to break down this barrier potassium iodid in large doses may be of assistance, and must be combined with prolonged and persistent specific therapy.

Georgia Medical Association Journal, Augusta

March, III, No. 11, pp. 359-393

32 Diagnosis and Treatment of Duodenal and Gastric Ulcers. W. R. Houston, Augusta.
33 Autogenous Versus Stock Vaccines. C. W. Gould, Atlanta.
34 Use of Bacterial Vaccines in Treatment of Acute Chronic Infections. Report of Results. L. M. Gaines, Atlanta.
35 Desirability of Knowledge in Using and of Simplicity in Prescribing Drugs. R. H. Stovall, Macon.
36 Report of Ten Transfusions. C. C. Harrold, Macon.
37 Salpingitis. A. Griffin, Valdosta.

Journal of Infectious Diseases, Chicago

March, XIV, No. 2, pp. 217-401

38 *Pasteurization in Bottles and Process of Bottling Hot Pasteurized Milk. S. H. Ayers and W. T. Johnson, Jr., Washington, D. C.
39 *Ferments for Carcinomatous Protein in Blood Carcinoma. G. F. Dick, Chicago.
40 Phenomena Involved in Life History of Spirochaeta Suis. W. E. King and R. H. Drake, Detroit, Mich.
41 *Non-Cholera Vibrio Resembling True Cholera Vibrio and Pigment-Forming Vibrio. J. G. Drennan, Staten Island, N. Y.
42 Disinfectant Action of Certain Bacterial Stains. A. M. Jansen, Columbus, Ohio.
43 *Trachoma and Allied Conditions in New York School Children. A. W. Williams and Others, New York.
44 *Absorption of Antitoxin and Agglutinin Injected Subcutaneously. W. H. Park, L. W. Famulener and E. J. Banzhaf, New York.
45 Serum Sensitization and Dosage of Antitoxin. W. H. Park, L. W. Famulener and E. J. Banzhaf, New York.
46 *Protective Enzymes, Immune Sera and Anaphylaxis. R. M. Pearce and P. F. Williams, Philadelphia.
47 Immunologic Relationship of Hordein of Barley and Gliadin of Wheat. G. C. Lake, T. B. Osborne and H. G. Wells, Chicago.
48 *Anaphylactogen Activity of some Vegetable Proteins. H. G. Wells and T. B. Osborne, Chicago.
49 *Immunologic Reactions of Proteins of Human Placenta with Special Reference to Production of Therapeutic Serum for Malignant Chorion Epithelioma. G. L. Lake, Chicago.

38. **Pastcurization in Bottles.**—The authors summarize the result of their work as follows: The process of pasteurization in the bottle using a temperature of 145 F. for thirty minutes causes satisfactory bacterial reductions. Bottles should be steamed before being filled with milk for at least two minutes in order to destroy heat-resisting types of organisms which might survive the pasteurizing temperature and thereby increase the bacterial count. Care must be taken to record the temperature in the bottom of the bottle during the heating process. When milk at an initial temperature of 50 F. is heated in bottles without agitation in water at about 146 F. the temperature of the milk in the top of the bottle will reach 140 F. about nine minutes before that in the bottom. The temperature of the milk during the process of pasteurizing in the bottle should be recorded by placing a thermometer in a control bottle with the bulb of the thermometer about ½ inch from the bottom. The milk should be heated for thirty minutes at 145 F. Care should be taken not to use bottles with chipped or otherwise imperfect tops since the seal caps may allow leaks during the process of pasteurizing. It is advisable for the users of patented seal caps to assure themselves that the caps are water-tight since leaking caps might cause dangerous infections, particularly if the cooling water is polluted.

The great advantage of the process of pasteurization in bottles over the ordinary systems in use at present lies in the fact that no recontamination can take place from the time of pasteurization until it reaches the consumer, when the caps are water-tight. There is also a saving in milk losses due to handling and evaporation over coolers which is usual in the ordinary methods of pasteurization. Considerable expense, however, is incurred owing to the necessity of water-tight caps, which is a disadvantage of the process. Whether the saving in milk losses makes up for the additional expense of seal caps can be determined only by experience. The process of bottling pasteurized milk while hot into hot, steamed bottles causes equally good bacterial reductions as pasteurization in bottles. Even with the same lengths of exposure of thirty minutes and the same temperature of 145 F. the bacterial reductions are often much greater than those produced by pasteurization in bottles. In the process of bottling hot, bottle infection is eliminated even when several cubic centimeters of old sour milk are added to bottles before filling. The two minutes steaming period to which the bottles are subjected before filling with hot milk is sufficient to destroy the contamination at least so far as bacteriologic methods can detect.

Laboratory experiments indicate that milk may be pasteurized, bottled hot, capped with ordinary cardboard caps, and cooled by a blast of cold air. It is probable that if milk is cooled from 145 to 50 F. within five hours no more bacterial increase will take place during the slow cooling than would take place if the milk were cooled immediately to 50 F. Whether or not this will be true under commercial conditions can be determined only by future experiments. As far as the authors' laboratory experiments indicate, when milk is heated to 145 F. for thirty minutes, bottling hot pasteurized milk followed by slow gradual cooling has no more appreciable effect on the cream-line or flavor of milk than does the ordinary process of pasteurization. This is true for cooling periods of less than five hours' duration. Since milk contracts on cooling, a quart bottle filled with milk at 145 F. does not hold a full quart when the milk is cooled to 50 F. It is about 0.62 of an ounce short. Therefore slightly oversized bottles should be used. The advantages of the process are: (1) that the bottle infection can be eliminated, (2) that milk losses are saved, owing to evaporation over the cooler, and (3) that ordinary cardboard caps can be used. The principal disadvantage is that the air-cooling process requires several hours. This, however, would be a disadvantage only in the few plants where milk is delivered directly after pasteurization. The process of bottling hot pasteurized milk followed by air-blast cooling appears from these laboratory experiments to be an entirely feasible modification of the "holder" system of pasteurization. This process will be the subject of a future study on a commercial scale in which the details of bottling and air-blast cooling can be worked out in a manner which will prove or disprove the practical value of this process.

39. **Ferments for Carcinomatous Protein.**—By the titration method of estimating amino acids, ferments capable of splitting protein from carcinomatous tissue were demonstrated by Dick in the blood serum of patients with carcinoma. The power of the blood serum of carcinomatous patients to split carcinomatous protein is not different from the normal with the same constancy and to the same degree when estimated by amino acid titration as indicated by the results obtained with the dialysis method of Abderhalden. Serum capable of splitting protein from carcinoma of the uterus was also capable of splitting protein from carcinoma of the breast, but not mixtures of gelatin and Witte's peptone. The complement content of the blood serum of a carcinoma patient Dick found is as a rule higher than normal. Ten cases were studied.

41. **Non-Cholera and Pigment-Forming Vibrio.**—This vibrio is reported by Drennan because chromogenic vibrios are rare, if indeed one has as yet been reported. The rectal contents from which it was isolated were obtained by rectal swab from a young male, 18 years old, who showed some signs of intes-

tinal disturbance. It is a large, motile vibrio producing a large, white moist colony on alkaline agar and turning slowly to a dark, rich brown color from the formation of a pigment. The same grown alkaline peptone culture medium shows a growth at the surface, which slowly changes to the same dark brown and gradually extends to the depths of the tube. It is an aerobe and a facultative anaerobe, liquefying gelatin slowly. It produces acid in dextrose and saccharose peptone but not in lactose. It is slowly hemolytic and on alkaline blood-agar produces a geranium odor similar to that of the growth of *Bacillus pyocyaneus*. It is monotrichous and in this respect resembles the true cholera vibrio. It produces no indol. The only points of resemblance between the true cholera vibrio and this pigment forming one are (1) the same source, human feces; (2) stain Gram-negative; (3) both are aerobes, but the latter is also a facultative anaerobe.

43. **Trachoma and Allied Conditions in New York School Children.**—This study of 4,000 children showed that the written descriptions of trachoma do not agree as to a clinical or a pathologic entity. Among the children in 60 public schools in the crowded lower East Side of New York City (supposed to be a hotbed of trachoma) during the past four years no cases of conjunctival affections answering in their entirety to the classic descriptions of trachoma were found. None of the 3,000 and more cases of follicular affections in these children have developed cicatricial changes due to the infection; on the contrary the great majority of them now present normal conjunctivas. The authors attribute these results chiefly to the following measures: (*a*) The carrying out of preventive methods of treatment such as ophthalmia schools and school clinics, summer camps, mothers' demonstration classes, home instructions and "follow-up" work. (*b*) More minute care of acute, as well as of chronic cases, including the specific treatment given chiefly at clinics and the "follow-up" work in the homes. (*c*) Non-operative procedures in a large number of cases formerly operated.

Hemoglobinophilic bacilli were found in a large proportion of the cases of chronic conjunctivitis (especially of the papillary type) as well as in those of acute catarrhal conjunctivitis (including clinically typical "pink eye"). These bacilli, though they probably represent several different varieties, have not yet been differentiated from *Bacillus influenzae*. These bacilli were found coincidently with trachoma inclusions in a high percentage of the cases of subacute and chronic conjunctivitis when examined from the beginning. They show morphologic and staining characteristics similar to those seen in trachoma inclusions; and transition forms between bacilli and inclusions are frequently seen in these cases. In a few cases of acute catarrhal conjunctivitis, trachoma inclusions and transition forms have been found coincidently with hemoglobinophilic bacilli and in several other acute cases transition forms have been often found. Many of the cases of chronic papillary conjunctivitis not actually followed from the beginning gave a history of repeated acute attacks, and several cases beginning as acute contagious conjunctivitis passed into the chronic condition called papillary conjunctivitis.

Cell inclusions similar to the trachoma inclusions found in the papillary conjunctivitis cases were found in cases of gonorrheal ophthalmia neonatorum, cultures from which showed only gonococci. These inclusions differ somewhat from those found in the papillary conjunctivitis cases, and transition forms between gonococci and inclusions are seen in smears from the former cases. Members of the pneumostreptococcus group were frequently found in chronic as well as in acute cases, especially in those cases showing pannus.

The general conclusions arrived at are: (1) Trachoma inclusions are nests of growing bacteria in epithelial cells—hemoglobinophilic bacilli in certain cases of papillary conjunctivitis, gonococci in certain cases of gonorrheal conjunctivitis and possibly other bacteria in certain other cases of conjunctivitis. (2) Under minute hygienic and medicinal treatment, the great majority, if not all, of the cases of conjunctival affections of children may run a benign course resulting in normal conjunctivas. (3) Comparatively few, if any, cases of chronic conjunctivitis develop in individuals exposed, if the rules of general and personal hygiene are carried out. (4) If trachoma is present or should be introduced among our schoolchildren it may be controlled by methods which are within practical limits.

44. **Absorption of Antitoxin and Agglutinin.**—The degree of protein concentration which is usually employed to produce the refined and concentrated diphtheria antitoxin globulin preparations the authors found has little or no effect in retarding the absorption of the antitoxin from the subcutaneous tissues. The removal of water, if not pushed too far, is therefore a justifiable means of lessening the quantity of fluid to be injected. Any preparation which causes local inflammatory reaction lessens the rate of antitoxin absorption.

46. **Protective Enzymes, Immune Sera and Anaphylaxis.**—On the basis of Abderhalden's theory of protective enzymes and by the use of his dialysis method it has been shown by Pearce and Williams that the serum of a rabbit receiving a single injection of kidney substance develops the power to digest dog's kidney *in vitro*, but has no effect on the kidney of the dog when administered intravenously. Thus it would appear that the so-called protective enzymes are not to be classed with the immune cytolysins. The digestive power of the serum which develops after the injection of kidney is not limited to the kidney but acts also on the liver. This is true after one injection or after four or five injections. There is some evidence, however, after multiple injections of a tendency to a more definite effect on the kidney than on the liver.

A few attempts to demonstrate protective enzymes in the serum of dogs receiving dog's kidney and of animals with experimental nephritis have failed. Attempts to demonstrate protective enzymes in the serum of dogs sensitized to horse serum have not been successful as those of Abderhalden with the serum of the guinea-pig sensitized to egg-white. Negative results have been the rule before shock, and positive results, difficult of explanation, after shock. Dialysis, alone, of small amounts (2 c.c.) of serum, obtained either before or five to ten minutes after "shock" in dogs sensitized to horse serum, gives no evidence of the presence of the products of protein disintegration. Large amounts (10 to 20 c.c.) taken one-half to one and one-half hours after shock give positive results after dialysis, but the interpretation of these is doubtful on account of the difficulty, under these circumstances of obtaining serum free of traces of hemoglobin.

The authors conclude that the results of the injection of renal tissue support Abderhalden's general contention concerning protective enzymes, but indicate a lack of specificity. On the other hand this work with anaphylaxis, while suggestive, is not sufficiently definite to be used in support of the theory that the essential mechanism of anaphylaxis can be explained on the theory of the development of a protective enzyme. On account of the many difficulties which the technic of this method presents—and especially because of the frequent presence of ninhydrin reacting substances in the serum of normal animals—thus rendering exact control observation difficult, these results are presented with some hesitation. Moreover, without desiring to detract in any way from the importance of the underlying principle of Abderhalden's theory of protective enzymes as exemplified by this work on pregnancy, they urge caution as to hasty attempts to apply this theory as a general explanation of widely diverse conditions of altered physiology.

48. **Anaphylactogenic Activity of Vegetable Proteins.**—The data presented in this paper support the assumption that the severity of the anaphylaxis reactions produced by intraperitoneal injections of dilute alkaline solutions of vegetable proteins is, approximately, in inverse ratio to their relative precipitability when their solutions are mixed with the peritoneal fluid. Proteins like edestin, which are readily precipitated, and only slowly redissolved, under conditions similar to those presumably prevailing in the peritoneum, rarely produce a fatal intoxication; whereas those that are less easily precipitated and more readily dissolved, give fatal

reactions in much smaller doses. The lethal dose of those vegetable proteins which are readily soluble in pure water, or in very dilute saline solutions, is smaller than that of those which are soluble only in comparatively strong saline solutions. The minimum intoxicating dose of most of the vegetable globulins (i. e., proteins insoluble in pure water but soluble in saline solutions) administered intraperitoneally is from 1 to 2 mg., but from 5 to 10 mg. are usually required for severe intoxication. On the other hand, the minimum intoxicating dose of those so-called vegetable proteoses which are readily soluble in pure water and are uncoagulable by heat is much smaller, moderate to severe reactions being obtained with 0.05 to 0.1 mg. and fatal results with 0.5 to 2 mg.

49. **Proteins of Human Placenta.**—The possibility that immune serum of therapeutic value in chorion-epithelioma can be prepared specifically for the human placenta is, in Lake's opinion, at least at this time, extremely slight.

Journal-Lancet, Minneapolis

March 15, XXXIV, No. 6, pp. 149-172

50 Clinical Aspects of Primary Diffuse Degeneration of Spinal Cord. C. E. Riggs, St. Paul.
51 Knee-Joint: Anatomy and Physiology. E. R. Hare, Minneapolis.
52 Case of Mikulicz' Disease. C. Fisher, Rochester, Minn.
53 Epigastric Pains. J. E. Engstad, Minneapolis.
54 Arteriosclerosis. C. W. Watson, Minneapolis.

Kentucky Medical Journal, Bowling Green

March 15 and April 1, XII, Nos. 6-7, pp. 189-236

55 Functional Affections of Heart. C. B. Johnson, Earlington.
56 Fractures and Roentgenography. R. C. Falconer, Lexington.
57 Review of Bulletin of State Board of Health of Kentucky, Biennial Report, 1910-1911. B. C. Frazier, Louisville.
58 Anesthesia. L. Frank, Louisville.
59 Hare Lip. D. O. Hancock, Henderson.
60 Cases of Ocular Disturbance Caused by Nasal Disease. S. G. Dabney, Louisville.
61 Chronic Constipation. B. Asman, Louisville.
62 Postdiphtheritic Paralysis. G. C. Hall, Louisville.
63 Treatment of Alcoholism. E. W. Stokes, Louisville.
64 Cesarean Section, Naegele Pelvis. (Report of Case.) J. H. Peak, Louisville.
65 Tuberculous Meningitis. J. A. O. Brennan, Louisville.
66 Foreign Body in Eye Removed by Magnet. J. M. Ray, Louisville.
67 Intraspinous Injection of Salvarsanized Blood Serum in Syphilitic Affections of Central Nervous System. C. W. Jefferson, Louisville.
68 Medical Ethics. J. W. Ellis, Masonville.
69 Is Demand for Services of Regular Practitioner Growing Less? W. J. Shacklette, Nolin.

Medical Record, New York

April 4, LXXXV, No. 14, pp. 559-644

70 *Method for Plicating Voluminous Ceca. J. A. Blake and J. N. Worcester, New York.
71 Drainage of Bladder Following Suprapubic Operations. C. H. Chetwood, New York.
72 Dental Aspect of Oral Infection. M. L. Rhein, New York.
73 Case of Sporotrichosis with Multiple Localizations. F. Dominguez, Havana, Cuba.
74 Liquor Question in Medicine. E. H. Williams, Montclair, N. J.
75 Present Status of the Non-Operative Treatment of Benign and Malignant Growths. At Clinics Abroad. S. Stern, New York.
76 Cicatrix of Bladder Relieved by Fulguration. L. B. Bangs, New York.
77 Autoserum Injections in Certain Obstinate Dermatoses. W. S. Gottheil and D. L. Satenstein, New York.

70. **Method for Plicating Voluminous Ceca.**—The operation employed by Blake and Worcester consists in stitching the ventral and lateral teniae together after the appendix has been removed; thus folding in or plicating the cecum and ascending colon. A non-absorbable suture of silk or linen is used, and the stitches are taken a long way apart, usually about two centimeters or a little less, so that when the stitch is drawn tight the length as well as the diameter of the gut is diminished. The stitching is carried aborally as far as is practicable, usually for 10 to 15 cm.. The contractility of the gut is not impaired as it would be if part of the wall were excised, and it is believed that on account of its diminished capacity there is not so great a tendency to accumulation and stasis. Apparently the results confirm the reasonableness of this belief.

Military Surgeon, Washington, D. C.

April, XXXIV, No. 4, pp. 301-400

78 Modern Operations for Glaucoma with Especial Reference to Elliot Operation of Corneo-Scleral Trephining. L. W. Fox, U. S. Army.
79 Detection of Tuberculosis in Recruit. L. H. Schultz, Colorado National Guard.
80 Leprosy in Its Relation to Treponematous Disease. F. Schmitter, U. S. Army.
81 Disease and Garrison Ration. G. L. McKinney, U. S. Army.
82 Is Field Hospital Unit Sufficiently Mobile to be of Practical Use During an Active Campaign? H. H. Doan, National Guard of Pennsylvania.
83 *Sprue Treated by Emetine Hydrochlorid. F. Schmitter, U. S Army.
84 Anti-Typhoid Vaccination. F. W. Foxworthy, U. S. Army.
85 Cocainism in Army. W. B. Meister, U. S. Army.
86 Rational Treatment of Gunshot Wounds of Abdomen on Battlefield. J. Frank, Illinois National Guard.
87 Pocket Field Case for Medical Officers with Actively Moving Commands. P. C. Fauntleroy, U. S. Army.

83. **Sprue Treated by Emetine Hydrochlorid.**—In six cases of sprue Schmitter used emetine hydrochlorid with good results. In all of these cases the soreness of the tongue and mouth either cleared up or was improved. All of them had complained of a feeling of tension across the upper abdomen which they usually volunteered to say was relieved soon after the emetin treatment began. The objection to the treatment is the increased activity of the bowel which it causes, but that is only temporary and trivial in comparison with the general improvement. In the first three cases treated the emetin was dissolved by the acid of hydrochloric acid and given intramuscularly. The results in these cases seemed more prompt and definite than in the later three cases which were treated with hypodermic injections of emetin hhydrochlorid purchased in the market.

New Mexico Medical Journal, Las Cruces

March, XI, No. 6, pp. 177-206

88 Disease of External Canal, Simulating Middle Ear Disease E. R. Carpenter, El Paso, Tex.
89 Every-Day Eye Injuries. F. E. Till, Albuquerque.
90 Unusual Eye Injuries. E. H. Irvin, El Paso, Tex.
91 Pellagra. J. W. Colbert, Albuquerque.

Old Dominion Journal of Medicine and Surgery, Richmond, Va.

March, XVIII, No. 3, pp. 113-185

92 Direct Suture of Brachial Artery for Traumatism. J. G. Sherrill, Louisville, Ky.
93 Medical Man of Yesterday, To-Day and To-Morrow. B. C Keister, Roanoke.
94 Fractures of Neck of Femur. J. E. Moore, Minneapolis, Minn.
95 Specialism in Its Relation to Public and Profession from Standpoint of General Practitioner. R. M. Wiley, Salem.
96 How Some Little Ones Die. W. H. Taylor, Richmond.

Pennsylvania Medical Journal, Athens

March, XVII, No. 6, pp. 421-522

97 *Puerperal Sepsis and Present Methods of Treatment. E. E. Montgomery, Philadelphia.
98 Structural or Fixed Scoliosis and Its Treatment by Abbott Method. J. T. Rugh, Philadelphia.
99 Recent Advances in Diagnostic Blood Examination. O. H. P. Pepper, Philadelphia.
100 Eustachian Tube. G. R. S. Corson, Pottsville.
101 *Relation of Venereal Diseases to Public Health. E. Martin, Philadelphia.
102 *Problems of Unfit. E. E. Mayer, Pittsburgh.

97. Abstracted in THE JOURNAL, Oct. 18, p. 1484.

101. Abstracted in THE JOURNAL, Oct. 25, p. 1564.

102. Abstracted in THE JOURNAL, Oct. 11, p. 1398.

South Carolina Medical Association Journal, Seneca

March, X, No. 3, pp. 439-477

103 Benzol in Treatment of Leukemia. J. H. Gibbes, Columbia.
104 Surgical Clinics in Europe. H. A. Royster, Raleigh, N. C.
105 Questions Submitted by State Board of Medical Examiners of South Carolina, November, 1913. H. H. Wyman, Aiken.
106 Psychology of Negro Revival. H. D. King, New Orleans, La.

Washington Medical Annals, Washington, D. C.

March, XIII, No. 2, pp. 83-171

107 *Autoserotherapy in Serofibrinous Pleurisy. C. A. Pfender, Washington.
108 "Chronic Irritation" and "Fertilization of Epithelial Cells by Sperm"—Conjoint Causes of Cancer. A. F. A. King, Washington.
109 Case of Miliary Tuberculosis of Lungs Diagnosed by Roentgen Rays. C. A. Pfender, Washington.
110 Two Cases of Ectopic Pregnancy. I. H. Lamb, Washington.
111 Case of Epignathus. D. S. Lamb, Washington.

112 Case of Tuberculoma of Cerebellum. P. B. Johnson, Washington.
113 Hysteria Simulating Eclampsia in Primipara at Thirty-Seventh Week of Pregnancy. P. Willson, Washington.
114 Osteosarcoma of Humerus Following Fracture. A. R. Shands, Washington.
115 *Method of Testing Renal Function with Phenol-Sulphone-Phthalein. W. A. Frankland, Washington.
116 Case of Aneurysm of Thoracic Aorta, with Paralysis of Left Diaphragm and Hour-Glass Contraction of Stomach. J. D. Thomas, Washington.
117 Cavitation of Lung in an Infant Dying in Seventh Month. B. M. Randolph, Washington.
118 Essential Hematuria. A. Kemble, Washington.
119 Four Cases of Pregnancy Complicated by Uterine Tumors. W. S. Bowen, Washington.

107. **Autoserotherapy in Serofibrinous Pleurisy.**—In Pfender's opinion autoserotherapy is a reliable and safe method of treatment for all forms of serofibrinous pleurisy and should be employed in every case in which pyemic infection is absent. A positive cure may be expected in over 80 per cent. of cases. He analyzed the reports of 565 cases recorded in the literature since 1894; of this number 424 were cured and 31 benefited. In secondary pleurisies autoserotherapy may not exert any beneficial effect on the primary cause of disease. It will merely cause rapid absorption of the pleuritic fluid, however, and in incipient tuberculous conditions has been known to arrest the progress of this disease. In large effusions causing severe dyspnea and pain it is advisable to aspirate from 10 to 200 c.c. of fluid and before withdrawing the needle entirely to reinject 2 to 3 c.c. under the skin of the patient. The result will be immediate relief from subjective symptoms and more rapid absorption of the exudate. Autoserum injections should be repeated every other day until decided improvement follows. It is advisable to employ small doses from 2 to 3 c.c. only, as most authors have had the best results with this dose, and larger doses may not be without danger. Pfender cites three personal observations.

115. **Testing Renal Function with Phenolsulphonephthalein.**—In the method of Frankland the patient first drinks two glasses of water, after which 1 c.c. of a solution containing 6 mg. of phenolsulphonephthalein is injected into the lumbar muscles. The urine is passed or drawn into a vessel containing an alkaline solution every five minutes after the injection until the distinctive color of the dye is observed, and every hour afterward, counting from the time of the injection, until the color is no longer present in the urine. Four bottles are provided and are numbered in which these specimens are placed for later examination, when their contents must be made alkaline, if not already so, by the addition of sodium hydroxid solution.

In normal cases the dye should appear in the urine in from five to ten minutes. By the end of the second hour about 80 per cent. should be excreted, leaving only 20 per cent., which is usually excreted within the third hour. The bottles of urine, therefore, would be colored as follows: First and second bottles, deeply colored; third bottle, pale; fourth bottle, urine uncolored. In abnormal cases in which the appearance of the dye in the urine is delayed, the results will be apparent in the bottles accordingly. The first bottle may be pale or uncolored by the dye. The second, third and fourth bottles may be colored with a pale or deep tint, depending on the rapidity of excretion. In the severe cases, especially in interstitial nephritis in which uremia is impending, the first bottle may be uncolored urine, the following ones all having the pale tint due to slow excretion.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

March 21, I, No. 2777, pp. 663-692

1 *Art of Prescribing. A. P. Luff.
2 Business Side of Medical Practice. J. Collie.
3 Medical Etiquette, Ethics and Politics. R. C. Buist.
4 Cancer, Public Authorities and Public. C. P. Childe.
5 Experiences of National Health Insurance Act. E. F. Pratt.
6 Hygienic Aspect of Coal-Mining Industry in United Kingdom. (Continued.) F. Shufflebotham.

1. **Art of Prescribing.**—It is Luff's conviction that there is a growing practice which is rapidly threatening to undermine to a great extent what he considers to be the skilled and rational employment of therapeutic agents in the treatment of disease. He refers to the too general use of powerful drugs in compressed forms and of proprietary preparations. Undoubtedly lamellae and tabellae of active principles in the hands of medical men are most convenient and useful for hypodermic and occasionally for other forms of administration; but it is the ready facility with which powerful drugs prepared in this form are obtained by the public which constitutes a grave danger, a facility which is responsible to a great extent for the increasing practice of self-drugging. Equally bad is the use of some of the proprietary preparations which are so speciously puffed, and with the samples and laudatory advertisements of which physicians are so profusely deluged, tempting the medical man as they do to the enervating habit of thinking that the writing of an order for such a preparation is the writing of a prescription, and gradually rendering him absolutely impotent to exercise the true art of prescribing.

There is another aspect to this subject to which Luff directs attention. The practice of writing an order for a particular form of compressed drug, or for a proprietary preparation (he says he cannot dignify such an act as the writing of a prescription) is apt to encourage patients to recommend such proprietary articles to their immediate friends who in their opinion are suffering from similar symptoms or from what they imagine to be a similar complaint.

The factors which make for success in the art of prescribing as Luff lays them down are: (1) A sound acquaintance with the therapeutic uses of drugs. (2) A thorough knowledge of the doses of drugs. (3) The avoidance of the mixing of drugs that are incompatible. (4) The administration of drugs which are nauseous or distasteful in such a form or combination as to be palatable to the patient.

Journal of Tropical Medicine and Hygiene, London

March 16, XVII, No. 6, pp. 82-96

7 Human Recovery from Trypanosomiasis. T. S. Kerr.
8 Further Case of Entoplasmosis. A. Castellani.

Lancet, London

March 21, CLXXXVI, No. 4725, pp. 803-876

9 Biology of Tumors. C. M. Moullin.
10 Technic of Operation of Sclero-Corneal Trephining for Glaucoma. R. H. Elliot.
11 *Nature of Rodent Ulcer. H. G. Adamson.
12 Arteriosclerosis. L. Williams.
13 *Etiology of Endemic Cretinism, Congenital Goiter and Congenital Parathyroid Disease. R. McCarrison.

11. **Nature of Rodent Ulcer.**—Two facts are mentioned by Adamson which might be thought to stand in the way of the acceptance of the view that rodent ulcer is etiologically distinct from the epitheliomatous growths which may occur as sequelae of keratosis senilis or chronic dermatitis solaris. One is that, exceptionally, one may find prickle cells and cell nests in typical rodent ulcer, and that in rare instances rodent ulcer may infect glands. But these exceptional occurrences may readily, Adamson says, be explained by regarding the rodent ulcer, with its tendency to imperfect repair by scarring, as itself a precancerous condition which may in rare cases in the same way as the scars of lupus vulgaris give rise to epitheliomatous growths.

The second fact is that it is not uncommon to find among the squamous-celled epithelioma of keratosis senilis other growths which are histologically indistinguishable from rodent ulcer, which are indeed basal-cell epitheliomata. But this does not constitute them rodent ulcers, and it may still be claimed that their situation on damaged skin and their mode of origin from the same distinguish them from rodent ulcers, which arise from embryonic cell-rests in certain situations and on skin not previously damaged by inflammation.

13. **Etiology of Endemic Cretinism, Congenital Goiter and Congenital Parathyroid Disease.**—Three important facts are noted by McCarrison in his experiments: (1) That out of 16 animals born of a goitrous mother which consumed fecal

filtrate prior to and during pregnancy, 3 were born cretins, while the 47 animals born in other cages showed no clinical or pathologic signs of this condition. (2) That of 31 animals, born of goitrous mothers which consumed either fecal anaerobes or the filtrate of a fecal emulsion, 15 were found to have congenital parathyroid disease. Of these, two-thirds were born of mothers consuming the anaerobic cultures, while one-third were born of a mother consuming a fecal filtrate which contained the toxic products of these anaerobes. The parathyroids were normal in 16 animals born of goitrous mothers in other cages. (3) Fecal organisms which grow aerobically on agar, while capable of causing marked hyperplasia of the thyroid gland, do not appear to be capable of producing any ill effect on the parathyroid glands.

Of the offspring of goitrous parents, then, a small percentage are born cretins; approximately 63 per cent. are born with congenital goiter, 32 per cent. are born with congenital parathyroid disease, and 33 per cent. are born with normal thyroid and parathyroid glands. McCarrison believes that cretinism and congenital goiter are due to the action of toxic substances derived from the intestines of the goitrous mother on the fetal thyroparathyroid mechanism. Cretinism represents the maximum, and comparatively rare, effect of these toxins; congenital goiter their minimum, and comparatively common, effect. Between these extremes all degrees of thyroid involvement may occur with or without associated swelling of the gland. Congenital parathyroid disease is due to the action on the fetal gland of the toxic products or organisms present in the intestine of the goitrous mother, which are capable of growth under anaërobic conditions.

Sei-I-Kwai Medical Journal, Tokyo

March 10, XXXIII, No. 3, pp. 13-19

14 Operative Treatment of Hydrocele. S. Mizokami.
15 Fracture of Neck of Femur in Children. R. Yajima.
16 Floating Liver in Childhood. K. Matano.
17 Treatment of Ankylosis of Joint. G. Tashiro.
18 Treatment of Inguinal Hernia in Child. D. Takayasu.
19 Testicular Neuritis Following Gonorrheal Epididymitis. S. Yoshida.

Bulletin de l'Académie de Médecine, Paris

March 3, LXXVIII, No. 9, pp. 297-338

20 Resolutions Adopted in Regard to Advising Restriction of Use of Poisons in Agriculture. Lucet and Others.
21 Experiences with Heated Antityphoid Vaccine. A. Chantemesse.
22 Hypertrophy of Pylorus in Adult, of Type Common in Infants. H. Hartmann.
23 Dermoid Cyst of the Inion; Two Cases. Walther.

March 10, No. 10, pp. 339-382

24 Typhoid Epidemic at Avignon; 673 Cases in Twenty-Five Days. Pamard.
25 *Rubber Grafts in Human Tissues. (Les greffes en caoutchouc.) P. Delbet.

25. **Engrafted Rubber Tissue.**—Delbet's idea is different from that of Fieschi who seeks to induce regeneration of tissues in the porous substance of a scrap of rubber sponge, as was described in these columns recently, 1914, lxii, 735. Delbet used a sheet of rubber tissue to reenforce the abdominal wall in treating a large hernia, and the rubber healed in place without any reaction. It is this apparently constant lack of irritation from rubber which seems to adapt it particularly for such operations. It seems evident, he says, that the motion and the chemical-physical conditions in the abdomen tend to preserve the life of rubber better than when it lies in a drawer. Like a living substance, it keeps better when it is functioning. His communication was summarized in the Paris Letter, April 4, p. 1106.

Journal de Médecine de Bordeaux

March 15, LXXXV, No. 11, pp. 173-186

26 Colonial Recruits for French Army from the Medical and Military Points of View. (Réflexions sur l'incorporation du contingent créole.) A. Le Dantec.

Presse Médicale, Paris

March 11, XXII, No. 20, pp. 193-200

27 Sterilization of Stools. (Désinfection des selles.) Arnould.
28 Mark-Time, Stepping and Other Spinal-Cord Automatic Reflexes. (Les réflexes d'automatisme médullaire chez l'homme.) A. Strohl.

Revue de Chirurgie, Paris

March, XXXIV, No. 3, pp. 233-340

29 *Bile in Ascitic Fluid with the Bile Passages Apparently Intact. (Les cholépéritoines.) M. Guibé.
30 *Traumatic Spondylitis with Necropsy. (Maladie de Kümmel.) V. Balthazard.
31 Retrograde Strangulation of Intestine in Double Loop Hernia. (Hernie en W.) H. Welsch.

29. **Bile in Ascitic Fluid.**—Guibé reports the case of an elderly woman who had what the Germans call "bile peritonitis without perforation of the biliary passages." Necropsy revealed, however, that escape of bile into the peritoneum was probably the primary phenomenon, and that the ascites had developed in consequence of the presence of the bile. An epithelioma in the head of the pancreas had pressed on the bile passages, and the bile had worked its way through the walls, infiltrating first into the subserous cellular tissue and then seeping through the serosa itself. The bile does not seem to irritate as long as it is sterile, but when it becomes infected it is liable to set up fatal peritonitis. The trouble may have a stormy onset, simulating appendicitis or cholecystitis, or it may develop with a chronic course like ordinary ascites. Drainage alone was applied in twelve cases and six of the patients died. It seems wiser to open or remove the gall-bladder; the record of cholecystectomy in such cases is three deaths in thirteen cases. The bile passages may have perforated enough to permit the escape of the bile and then the minute perforations have healed again and not been discovered. But even admitting this for a number of the cases on record, there are still numerous cases in which the bile must have seeped out through the wall.

30. **Traumatic Spondylitis.**—Balthazard adds another to the few cases on record in which after a fall the patient complained only of vague pains in the lumbar region after the first. He walked home after the fall but by the sixth month he complained of girdle pains and there was a hump in the dorsolumbar region. He died from an intercurrent disease and necropsy revealed that the spine had been fractured; the body of one of the vertebrae had been crushed and the transverse lamellae broken, but the spinous processes were intact.

Revue Mens. de Gynécologie, d'Obstétrique et de Pédiatrie, Paris

February, IX, No. 2, pp. 81-160

32 Study of the Mechanics of the Obstetric Forceps. L. Demelin.
33 Momburg's Belt Constriction in Treatment of Obstetric Hemorrhage; Three Cases. L. Pierra.

Semaine Médicale, Paris

March 18, XXXIV, No. 11, pp. 121-132

34 *Medicinal Treatment of Tuberculosis. (Un traitement efficace et pratique de la tuberculose pulmonaire.) J. F. Larrieu.

34. **Medicinal Treatment of Pulmonary Tuberculosis.**—Larrieu says that treatment should aim to tone up the system in general, to check the development of tubercles and check expectoration by curing secondary infections, and to reestablish good digestion. Stimulants and tonics tone up the general system and encourage the patient while guaiacol and potassium iodid answer the second indication. The cooperation of the patient is necessary so that he will avoid any excesses in diet liable to bring on dyspepsia and avoid sudden changes in temperature, especially exposure to the cool evening air after a hot day or to cool air at any time when his garments are wet with perspiration. The poor are able to benefit just as much from a course of treatment like this as those able to go to expensive sanatoriums, but the treatment must be kept up perseveringly even long after the disease has been clinically cured. When patients have proved docile, he has found the treatment he outlines extremely effectual and practical in a number of years' experience.

His first prescription is a mixture of 6 gm. potassium iodid; 8 or 12 gm. potassium bromid; 0.03 gm. strychnin sulphate, 20 c.c. tincture of cinchona; 40 c.c. each of tincture of coca

and tincture of kola, and 100 c.c. each of neutral glycerin and syrup of bitter orange peel. A teaspoonful of this is taken at breakfast for twenty days during each month, keeping it up for three months after all the local lesions have subsided in recent tuberculosis, and indefinitely in chronic tuberculosis and phthisis. The prescription can be modified by substituting some other flavoring or by using arsenic instead of the three first ingredients, especially in case of industrial tuberculous bronchitis. The above prescription can be supplemented by 0.25 gm. salol at the noon and evening meal to promote digestion. If the appetite is poor, during the periods of resting from the iodid prescription the patient might take nux vomica and Fowler's solution. Concurrently with this internal medication he gives subcutaneous injections of guaiacol with or without camphor or iodoform. The injection is made in the arm or back every five days at first and later every eight or ten days. This method of treatment suits the overwhelming majority of cases; it is comparatively convenient, and renders it possible for fully four-fifths of the tuberculous to continue at work, without the necessity for a fresh-air course. It has to be kept up almost endlessly, but when the patients see how they are gaining they seldom object to this. They must be warned that the subcutaneous injections are liable to be a little painful for a few seconds at first. When a complete cure has been realized, the medication can be suspended for longer and longer intervals each month. Larrieu does not give any statistics or clinical details beyond the above.

Archiv für Gynäkologie, Berlin

CII, No. 2, pp. 201-410. Last indexed March 21, p. 972

35 *Improved Technic for Treatment of Prolapse by Interposition of Uterus. E. Wertheim.
36 Source of the Bleeding when Tubal Pregnancy Ruptures. Y. Taniguchi.
37 *Imperforate Genital Tract as Obstacle to Delivery. (Gynatresien in der Gravidität.) C. Ruge.
38 *Congenital Universal Hydrops. W. Lahm.
39 *Spontaneous Amputation of Tube or Ovary. (Spontanabtrennungen der weiblichen Adnexe.) M. Ogorek.
40 Reciprocal Relations between the Ductless Glands. (Die gegenseitigen Beziehungen einiger Drüsen mit innerer Sekretion.) L. Okintschitz.

35. **Operative Treatment of Prolapse.**—Wertheim here describes a modification of the technic with which the uterus turned over forward serves as a pad to close the gap in the pelvic floor, the bladder resting on its back. He has found that even with this technic the mouth of the uterus or the fundus may work loose and protrude. All this is avoided, he declares, by suturing the uterus all around when it is fitted to cover the gap. The operation thus becomes more "suturing the uterus in the gap" rather than the primary designation of "interpositio vesicovaginalis." He has applied this technic during the past year with increasing satisfaction. Two large plates and four illustrations in the text accompany the article.

37. **Gynatresia During Pregnancy.**—Ruge remarks that the genital canal may become closed in the course of a pregnancy from the pressure on and swelling of the parts. Complete closure of the hymen has been reported in three cases, and he has recently encountered a case of stricture and stenosis of the vagina. In another case there was a muscular stricture at the internal os and the woman died in eclampsia at delivery. She had borne four children, and was previously healthy. The eclampsia came on at the sixth month, and the obliteration of the internal os seemed to be the outcome of an inflammatory process.

38. **Universal Hydrops.**—In Lahm's case there were signs of syphilis in the new-born child, so the universal hydrops may be credited to this inherited taint in this case. A number of chemical and other causes may be responsible for it, and toxic substances in the mother's blood acting predominantly on the kidneys or blood-producing apparatus of the fetus. Pregnancy nephritis and syphilis are the factors most commonly involved.

39. **Amputation of the Uterine Adnexa.**—Ogorek has encountered two instances of this occurrence and has found ninety-seven cases recorded, all of which he analyzes. Torsion and strangulation are of course the direct cause and trauma is generally responsible for both, mechanical forces and gravity completing the work started by the trauma.

Archiv für klinische Chirurgie, Berlin

CIII, No. 4, pp. 871-1097. Last indexed March 28, p. 1055

41 *Circumscribed Suppuration in Pleura and Lungs. (Die Therapie der Pleuraempyeme und Lungenabscesse.) E. E. Pribram.
42 *Dislocation of the Pelvis. (Beckenluxationen.) Heinemann and Siedamgrotzky.
43 *Kidney Tumors of Embryonal Origin. (Embryonale Nierengeschwülste.) Junkel.
44 *Dangers and Treatment of Abdominal Infection. (Abdominale Infektion. Passagestörungen und ihre Folgezustände.) E. Gelinsky.
45 The Obturator Nerve. (Die intrapelvine extraperitoneale Resektion des Nervus obturatorius und anatomische Studien über die Topographie dieses Nerven.) R. Selig.
46 *Experimental Puncture of the Heart. (Verwendbarkeit der Punktion des Herzens zur Hervorrufung experimenteller Klappenfehler.) H. C. Jacobaeus and G. Liljestrand.
47 Primary Angioma in Muscle. A. Serra.
48 *Acute Perforation of Gastric and Duodenal Ulcer. W. W. Florowsky.
49 Fat Graft to Arrest Hemorrhage. (Experimentelle Untersuchungen über freie Fetttransplantation bei Blutungen parenchymatöser Bauchorgane.) A. Hilse.
50 *Continuous Lavage of the Stomach. (Zur Dauerausheberung des Magens.) M. Grosser.

41. **Treatment of Suppuration in Pleura or Lung.**—Pribram gives full details of 100 cases in which operative treatment was applied for pleural empyema or pulmonary abscess at von Eiselsberg's clinic during the last thirteen years. These experiences emphasize anew the vital importance of early operative treatment in all suppurating inflammatory processes in the pleura and lungs; also the advantages of extensive local anesthesia and of differential pressure apparatus for operations on the lungs. Unless the process is a mild metapneumonic empyema or the operation is done in an emergency on a child, the process should be amply exposed and thoroughly drained, then covered with a light simple dressing. He warns against rinsing out the cavity at first, but says that a few weeks later it may be of advantage. The pure pneumococcus processes have the best prognosis; tuberculous processes make the greatest demands on the patience and perseverance of both patient and physician. He had 21 per cent. cured; 52.6 per cent. improved and 21 per cent. died of his thirty-eight patients in this group. One recovered completely under the Leysin sunshine and mountain air treatment.

42. **Dislocation of the Pelvis.**—Heinemann adds two more cases to the twenty-two on record in which the pelvic bones became dislocated, causing a puzzling train of symptoms. He gives roentgenograms of his cases to aid others in recognizing the trouble at need. The young man had been run over by a vehicle; the boy of 10 thrown from a wagon and hit by a large stone thrown also from the wagon. In both cases the pelvis was supposed to have been ruptured, but the Roentgen rays revealed the dislocation of one-half of the pelvis. In the man it had healed in an abnormal position, but the boy was seen soon after the accident and the dislocation was easily corrected by gradual weight extension into nearly normal conditions, and healed leaving scarcely a trace of a limp. Forcible reduction seems unwise on account of danger of injury of important parts. The gap in the symphysis shows comparatively little tendency to heal. There was no healing under six weeks' treatment in the case of the boy, and Heinemann thinks it might be as well to apply some operative measure here from the start, when the patient is seen soon after the accident. In old cases, wearing a higher sole seems the only thing to be done.

43. **Kidney Tumors of Embryonal Origin.**—Junkel reports two cases, a boy and girl of 2½, both recovering after removal of the large tumor weighing 650 and 860 gm. The first was an adenosarcoma, the other a fibromyosarcoma. Heinicke has compiled 138 tumors of this kind, but only one of the patients is known to be alive after an interval up to three years. Even this one case encourages the surgeon to operate, especially as the operation is always borne remarkably well.

44. **Dangers and Prevention of Abdominal Infection.**—Gelinsky's analysis of the experiences with ileus at the Charité in Berlin, shows that injury from toxic substances formed

during ileus is a greater danger than infection in case of ileus, as a rule. Also that meteorism must be regarded as a serious symptom as it may progress from paralysis of peristalsis alone to paralysis of the bowel. The laparotomy itself is absolutely harmless, he says; the danger from the general anesthesia required for the operation is much greater than from the incision itself. Local anesthesia may be used. When infection is already installed every effort should be made to close up or exclude the source of the infection. With local paralysis of the bowel, the excluded loop should be removed; if this is not possible it should be extensively drained. The injury done to peristalsis by the operation is best combated by early and systematic application of superheated air. This early after-treatment is the most reliable method at our disposal to date for starting up peristalsis anew when the changes are not absolutely irreparable.

46. **Experimental Valvular Disease.**—Jacobaeus reports his work in this line on one calf and eleven dogs; six of the animals survived the operation. He used a straight trocar with valve and cystoscope, the same technic as for laparothoracoscopy. There was no bleeding from the heart. A scrap from the heart lining or chorda or mitral valve was thus obtained. In one dog a large part of the median mitral valve was thus cut away and the dog rapidly recovered.

48. **Treatment of Gastric or Duodenal Ulcer.**—Florowsky writes from Odessa to report 4 operative cases from his own experience. He cites further 58 cases already on record in Russian literature. Collapse occurred on perforation in only 10 of the 41 gastric ulcers and in 6 of the 17 duodenal ulcers. There was a history of preceding stomach trouble in 16 of the duodenal cases and in 31 of the gastric cases; in some the perforation occurred like a bolt from a clear sky. He advocates injecting quinin at once after the operation as it stimulates the heart and peristalsis and promotes leukocytosis. Differentiation is best accomplished by seeking the negative symptoms which exclude other affections.

50. **Continuous Lavage of the Stomach.**—Grosser advocates introducing a retention stomach tube through the nose and thus keeping a constant flow of fluid in and out of the stomach as the best means available for combating acute atony of the stomach and duodenal-jejunal occlusion, postoperative paralysis of the bowel and ileus from adhesions or spastic contraction from peritonitic reflexes. The nose is first cocainized and then a soft oiled stomach tube with a lumen of 8 or 11 mm. is worked through the nose down into the stomach. As soon as it reaches there the stomach content generally spurts from the tube spontaneously. The stomach can then be rinsed out if desired; then a longer tube is attached to it and carried to a receptacle. Fluids can be supplied, he adds, by slow subcutaneous infusion, a drop at a time, of a warm isotonic salt solution, possibly with 4 per cent. grape sugar. Grosser says it is more convenient to apply both the stomach tube and the infusion on the left side, leaving the patient's right hand free. With this retention tube the mouth is left free and the patient can talk, swallow and have his teeth brushed, while the method has a number of obvious advantages over the ordinary technic for lavage of the stomach. He has had amounts up to 5 liters thus drain away. Westermann has applied the procedure to fifteen patients, Kappis to ten and Grosser himself to nine. The tube was left in place for four days in one of his cases. Kappis and Westermann found traces of the gastric mucosa having been sucked into the openings in the tube in two cases, and they advise keeping the outlet on a level with the bed to prevent aspiration. Grosser's patients who had the pus reaccumulate in the peritoneum were beyond rescue and all died. He advises a trial of the retention stomach tube in case of a vicious circle after gastro-enterostomy.

Berliner klinische Wochenschrift

March 9, LI, No. 10, pp. 433-480

51 *Pathology of Syphilis and Curative Action of Salvarsan. M. v. Zeissl.
52 *Tubercle Bacilli in the Blood-Stream. F. Klemperer.
53 Shellac Concrements in Gastro-Intestinal Tract. E. A. Hallas.
54 The Nissl Bodies. (Zur Chemie der Zelle. IV.) P. G. Unna and O. Gans.
55 Precocious Puberty Not Accompanied by Precocious Development of the Mind. A. Münzer.
56 Luetin in Diagnosis of Syphilis. (Intracutanreaktion mit dem Luetin von Noguchi. II.) Fagiuoli and V. Fischella.
57 *Fivefold Increase Since 1900 in Abortions Requiring Hospital Treatment at Berlin. (Zunahme der Fehlgeburten.) Bleichröder.
58 Ethylhydrocuprein in Treatment of Malaria. (Chemotherapie bei Malaria.) G. Izar and R. Nicosia. Commenced in 9.

51. **Salvarsan.**—Von Zeissl cites historical records to show that when mercury was first applied in treatment of syphilis it aroused a crowd of objectors and for nearly a century had to fight its way again and again. As late as 1860, J. Hermann of Vienna still proclaimed that constitutional syphilis was the work of the mercury that had been given, and a committee of investigation was appointed by the Austrian minister of the interior to decide the question. Zeissl states that he has never had any serious injury result in any of the 1,000 cases in which he has given salvarsan intramuscularly or neosalvarsan intravenously. He has had exclusively good results with them, as he excludes from this treatment every patient presenting contra-indications. He reviews literature from years before the discovery of salvarsan, in which deafness, blindness or paralysis are reported from untreated syphilis alone, and also fatalities and mishaps after mercury.

52. **Tubercle Bacilli in Blood-Stream.**—Klemperer presents extensive clinical anatomic and experimental evidence to show that there can be no doubt that in most of all forms of tuberculosis the tubercle bacilli get into the blood occasionally, in small amounts. Their presence in the blood has no significance for diagnosis or prognosis any more than the skin tuberculin reaction in adults. Their presence in the blood seems to be important only from the standpoint of immunization processes.

57. **Increasing Number of Abortions.**—Bleichröder has been compiling and comparing the statistics in regard to women brought to the Berlin hospitals for treatment after abortion, omitting the abortions from syphilis. In 1900 the total was 317; in 1910, it had risen to 841, and this has doubled in the three years since, the figure for 1913 being 1,694. This increase is mainly among the younger women. His comment on these figures is that the birth strike (*Gebärstreik*) is evidently being conducted not by prevention measures alone but also by systematic abortifacients, *Abtreibung*. He does not give the figures as to the mortality at the various hospitals but states that among 504 abortions in 1912 at one maternity 240 were septic cases and the mortality was 12.5 per cent.

Correspondenz-Blatt für Schweizer Aerzte, Basel

March 14, XLIV, No. 11, pp. 321-352

59 Action of Bromids. E. Bernouilli.
60 Universal Hydrops of the New-Born. (Zur Lehre der allgemeinen Wassersucht des Neugeborenen.) W. Lutz.

Deutsche medizinische Wochenschrift, Berlin

March 12, XL, No. 11, pp. 521-576

61 *Progress in Causal Treatment. (Fortschritte der ätiologischen Therapie.) P. H. Römer.
62 *Analysis of Action of Radio-Active Substances on Mouse Cancer. A. v. Wassermann.
63 Negative Results of Inoculating Rabbits with Mouse Cancer. (Mäusekarzinomimpfungen auf Kaninchen.) H. Apolant and K. Bierbaum.
64 *Immunization against Anthrax. (Milzbrandimmunität.) E. Wernicke.
65 Nature of Immunity to Tuberculosis. P. H. Römer and C. Siebert.
66 Chemotherapy. (Spezifische Desinfektion und Chemotherapie bakterieller Infektionen.) J. Morgenroth and E. Bumke.
67 *Diphtheria Antitoxin in Bacilli-Carriers, etc. (Gehalt des Blutes an Diphtherie-Antitoxin bei gesunden Erwachsenen, Rekonvaleszenten und Bazillenträgern; Bedeutung der letzteren bei der Diphtherie.) R. Otto.
68 *Danger and Prophylaxis of Anaphylaxis from Diphtheria Antitoxin. K. Joseph.
69 Standardization of Serums. (Praktische Ergebnisse der Heilserumkontrolle.) K. E. Boehncke.
70 Alkali Releases Toxin from Combination with Antitoxin. (Wirkung von Alkali auf die Antitoxinverbindungen der Toxine.) H. Sachs.
71 *Partial Antigens. H. Much.
72 Regional Differences in Stature and Weight. (Körpergrösse und Körpergewicht des Menschen.) H. Schwiening.

61. **Ehrlich and Behring.**—By a curious coincidence, these two scientists were born March 14 and 15, 1854, and both had been trained together under Robert Koch, and each has received a Nobel prize. After their early work had brought fame to each, Ehrlich devoted himself to the study of cancer and Behring to tuberculosis, but nothing which seems to be of importance was achieved by either in these lines. Then Ehrlich turned to chemotherapy and salvarsan and Behring to diphtheria anew. His new vaccine, Römer says, seems to promise a means of actually stamping out the disease as small-pox has been eradicated. Of Ehrlich's chemotherapy, he remarks that even if salvarsan does not prove an effectual remedy against syphilis, in certain tropical diseases it has already proved its efficacy beyond question. All the German weeklies of the above date do homage to Ehrlich and Behring.

62. **Action of Radio-Active Substances on Cancer Cells.**—Wassermann's conclusions from his analysis of the action of radio-active substances on mouse cancers are that the cancer cells are not killed but are rendered incapable of further growth. There is no further division, and the cell thus rendered sterile grows old and dies of itself and is removed by the normal cell-destroying forces of the organism. The greater the tendency in the cell to regeneration and proliferation, the more susceptible it is to this action of the radio-active substances. But the latter act only directly, and hence deep-seated cells do not seem to feel their influence at all, not even when reenforced by injection of metal salts to generate secondary rays.

64. **Immunization against Anthrax.**—Wernicke states that he has succeeded in rendering guinea-pigs immune to virulent anthrax. The immunization with other animals was less complete. It is particularly noticeable as guinea-pigs seem to be peculiarly susceptible to anthrax.

67. **Diphtheria Antitoxin in the Blood under Various Conditions.**—Otto's research confirms the assumption that a single attack of diphtheria does not cause the production of large amounts of antibodies. For this, repeated, possibly minute infections are more effectual. For example, physicians and nurses having to do with diphtheria patients gradually acquire a high antitoxin content in their blood serum. Bacillus carriers have a high antitoxin proportion. When there is no history of diphtheria, the person must have been subjected to repeated, minute infections which passed over with minimal or misinterpreted symptoms. This is proved beyond question by the high antitoxin content in the serum at the time and after the bacilli are found.

68. **Danger and Prophylaxis of Anaphylaxis from Antitoxin.**—Joseph insists that the danger of anaphylaxis in man has been much exaggerated; it is incorrect to assume that what is observed in extremely susceptible small animals applies to man. Only with much debilitated children and by intravenous injection of antitoxin a second time, is there danger. Heubner declares that with otherwise healthy children there need be no cause for anxiety on reinjection of antitoxin by the subcutaneous or intramuscular route. The attempts to avoid trouble by iodizing the antitoxin, using an oil vehicle, pasteurizing or removing the albumin have failed to prevent anaphylaxis in small animals while they materially lowered the antitoxin strength. He reiterates that the dread of anaphylaxis is baseless and that even if it were to be feared, we have means at our command to ward it off. Among these he enumerates the use of antitoxin obtained from cattle instead of horses. This could be used in prophylaxis, reserving horse antitoxin for use in case of actual diphtheria. Another way to ward it off is by means of the Neufeld-Besredka method of inducing anti-anaphylaxis by a preliminary subcutaneous injection of a minimal dose of the antitoxin. This prepares the body in such a way that the injection of the curative dose of antitoxin a few hours later has no power to elicit phenomena suggesting anaphylaxis. Still another way is by saturating the reacting body according to Friedberger and Mita by slow intravenous infusion of serum, a drop at a time. Either of these methods renders the sensitized organism refractory to the antitoxin regardless of the route by which it is introduced.

71. **Partial Antigens.**—Much says that not only the tubercle bacillus but a number of others can be separated into a soluble filtrate and insoluble sediment, each of which possesses the properties of an antigen. The dialysis procedure for serodiagnosis utilizes sediment; the optic procedure the filtrate. The sediment contains both albumin and fat; and the fat is both a neutral fat and a lipoid. For all of these, antibodies are generated, each partial antigen inducing production of its own partial antibody. The discovery of these facts and of cell immunity have opened new horizons for vaccine therapy. They have demonstrated among other things, he continues, that syphilis causes injury of cells and that the Wassermann reaction is the expression of this active injury of cells. It is not specific for syphilitic infection but it is a valuable index for treatment as the active destructive processes going on in the cells must be arrested to prevent further damage. If the Wassermann were really an immunity reaction, as some claim, it would be impossible to change it to a negative under the influence of treatment.

Jahrbuch für Kinderheilkunde, Berlin

March, LXXIX, No. 3, pp. 261-384

73 Muscle Pathology in Children. N. Krasnogorski.
74 •Increasing the Fat Content in Infant-Feeding. (Möglichkeit einer Fettanreicherung der Säuglingsnahrung.) A. Niemann.
75 Mother's Milk Combines Less Hydrochloric Acid than Cow's Milk. (Salzsäurebindungsvermögen von Frauen- und Kuhmilch.) H. Aron.
76 Growth of Animals after the Nursing Period on Mixed and on Carbohydrate Diet. H. Brüning.
77 Clinical and Morphologic Study of Congenital Atresia of the Tricuspid. E. Wieland.

74. **Increasing the Fat Content of Infants' Food.**—Niemann holds that substitutes ordinarily used for mother's milk contain much less fat than the mother's milk itself, and that the tendency is to increase the carbohydrates and decrease the fats. He believes that such injury as does result from too great fat content is due to the lower fatty acids, and he offers a method of increasing the fat-content that obviates this. It consists in the addition to the food of butter that has been thoroughly and repeatedly washed with cold water until the acid reaction has disappeared. The food—modified milk, malted gruel or whatever it is—should be heated, the butter added, and shaken so that it forms a fine emulsion. Enough butter should be added to bring the fat-content up to that of mother's milk.

Medizinische Klinik, Berlin

March 8, X, No. 10, pp. 401-442

78 •Inflammatory Processes Forming Tumors in the Abdomen. (Entzündliche Geschwülste der Bauchhöhle.) F. Hölscher.
79 •Pathogenesis of Stuttering. (Das Stottern eine Zwangsneurose.) E. Trömner.
80 •Diphtheric Process without Membrane. (Durch den Diphtheriebacillus hervorgerufene blenorrhoische Prozesse, speziell in der kindlichen Vagina.) E. Kobrak.
81 Modification of Pasteur Treatment of Rabies. (Modifikation der Lyssaschutzimpfung und deren Resultate in der Krakauer Ansalt.) O. Bujwid.
82 Findings with Abderhalden's Serodiagnosis Suggest that Epilepsy is of the Nature of Anaphylaxis. L. Grigorescu.
83 Experimental Syphilis in the Rabbit and Laboratory Infection of Two Attendants. (Histopathologie der experimentellen Kaninchensyphilis.) F. Graetz and E. Delbanco.

78. **Inflammatory Processes Forming Tumors in the Abdomen.**—Hölscher reports fourteen cases to illustrate the deceptive clinical pictures presented by such tumors of inflammatory origin. Even when the abdomen has been opened, it is not always easy to differentiate them. In one case a sarcoma in the omentum seemed beyond question, but the man refused to permit any operation and in two months the tumor disappeared entirely under bed rest, moist heat, potassium iodid and an iodin salve. Except for slight constipation, the man has been in good health since for fifteen years. In this and in several of the other cases, the tumor developed at a point on which there was pressure in working at a trade, and the tumor simulated inoperable cancer of the gall-bladder, uterine adnexa or stomach. A stricture in the rectum is sometimes responsible for conditions above which develop into an inflam-

mation tumor. His latest case was peculiarly instructive; the tumor was back of the right Poupart's ligament and caused no pain. An old scar in the groin was explained as the result of trauma and syphilis was denied. The Wassermann reaction was negative in the blood. The patient was a man of 41 and after a few months violent headache developed and the Wassermann reaction was found positive in the cerebrospinal fluid. Specific treatment for syphilis was pushed at once and all the symptoms promptly subsided except that a trace of the tumor can still be palpated. Most of these inflammation tumors are postoperative; sometimes two or three years may have elapsed since the operation. They develop slowly without fever or general disturbance unless the accelerated pulse points to an inflammatory process somewhere. They are always anchored solidly by adhesions and the adjoining organs become rapidly involved. Incision, not excision, is the principle for treatment and an exploratory laparotomy should not be too long delayed.

79. **Stuttering an Obsession-Neurosis.**—Trömner regards stuttering as a motor *Zwangsneurose* or obsession-neurosis, similar in nature to *tic impulsif*. In his study of ninety cases he found hereditary influences marked in 85 per cent. including forty with a simple neurotic taint, thirty-four with inherited stuttering and eleven with both. Infectious diseases and trauma have a marked influence on the neurosis. One of his patients began to stutter at 2 but overcame the tendency in his first year at school. It returned at 11 after an injury to the head, but was again conquered. It returned anew at 13 after typhoid and again at 25 after articular rheumatism. Damp weather and fatigue are liable to aggravate stuttering. He defines it as a localized form of obsession-neurosis, a pure conditional functional disturbance, which shows improvement when the attention can be diverted away from it. The child begins to stutter merely from some awkwardness in speaking, from ignorance of or forgetting the proper word, and this gradually becomes fixed as a pathologic habit. This is followed by the stage in which the effort to speak with as little stuttering as possible causes abnormal contractions of the muscles of the face and body, the obsession inhibitions having now an obsession motor accompaniment. The third and extreme stage is when autosuggestion or annoyance and dread amounting to an actual phobia magnify all the phenomena.

80. **Diphtheria of Vagina Simulating Gonorrhea.**—Kobrak relates that after the death of a young child for laryngeal diphtheria, the father and aunt developed the same but recovered under diphtheria antitoxin. In the first case there was no formation of false membranes but diphtheria bacilli were found in each in pure cultures. In some other cases related suppuration in the nose or nasopharynx was the only symptom revealing the diphtheria and the cases simulated severe influenza, but recovery was soon complete under antitoxin. These cases of diphtheria without membrane production gave the clue to and permitted promptly successful treatment in two cases observed in the course of the last six months in which little girls of 9 had a vaginal affection simulating gonorrhea in every respect. The children complained first of smarting in the vulva, increasing for three days. Then inspection revealed that the hymen and accessible mucosa looked exactly like the throat in diphtheria minus the membrane, and smears showed diphtheria bacilli. Under antitoxin and chamomile tea or mercurial sitz baths normal conditions were restored in ten days.

Monatsschrift für Kinderheilkunde, Berlin

XII, No. 8, pp. 453-532

84 *Treatment of Spasmophilia in Children. Bernheim-Karrer.
85 No Special Relation between Spasmophilia and Whooping-Cough. B. Erlanger.
86 Modern Theories of Infant Nutrition as Related to Practice. R. Halberstadt.
87 Growth of Twins in Height. A. Orgler.
88 A Case of Congenital Steeple-Shaped Skull. K. Hochsinger.
89 Delayed Absorption of Cerebrospinal Fluid in Hydrocephalus. W. Knopfelmacher and H. Mautner.
90 Emphysema of the Lungs a Symptom of Alimentary Intoxication. F. Bauer.
91 Inconstant Effect of Thymus Extracts. R. Fischl

84. **Spasmophilia in Children.**—Bernheim-Karrer recommends a combined treatment of spasmophilia with phosphorized cod-liver oil and milk curds from which the whey has been removed by washing with water, thus removing all mineral salts. He gives histories and tables for twelve cases in which he obtained a cure by this method; in nine of them within a week, twice at the end of the second, and once in the fourth week. The electrical reaction returned to normal. There was loss of weight under this diet, but never so great as to be alarming and it was soon compensated for on return to full milk diet.

Münchener medizinische Wochenschrift

March 10, LXI, No. 10, pp. 513-576

92 *Salvarsan Treatment of Syphilis in the Navy. (Die bisherigen Erfolge der Salvarsanbehandlung im Marinelazarett zu Wik.) Gennerich.
93 *Mode of Action of Salvarsan and Mercury in Syphilis. E. Schreiber.
94 *Salvarsan in Cerebrospinal Syphilis and Tabes. G. L. Dreyfus and G. Iwaschenzoff.
95 *Technic for Sterilization of Syphilis with Salvarsan. Leredde.
96 *Subcutaneous Injection of Neosalvarsan. Wechselman and Eicke.
97 *Intravenous Injection of Neosalvarsan. J. Katzenstein.
98 Technic for Injection of Concentrated Solution of Neosalvarsan. R. Seyffarth.
99 Reinfection after Recovery from Syphilis. E. Hardrat.
100 Quinin Intoxication not Anaphylaxis. (Zur Frage Arzneiüberempfindlichkeit.) A. Pöhlmann.
101 Fracture of Base of Skull Involving Mastoid Process, and Treatment. (Ueber Schädelbasisfrakturen mit Beteiligung des Warzenfortsatzes.) C. Kirchner.
102 *Reply to Critics of Serodiagnosis of Pregnancy. E. Abderhalden.
103 The Medical Curriculum. (Probleme des medizinischen Unterrichts.) F. Moritz. Commenced in No. 9.

92. **Experiences with Salvarsan in the Navy.**—Gennerich remarks that conditions are particularly favorable in the navy for study of syphilis and the effects of treatment, as the men are under such close supervision during their three or four years of service. He then gives the details of cases in which salvarsan has been given at the Kiel Marine Hospital, classifying them under numerous headings and devoting nearly ten pages to his experiences. He excludes all cases under observation for less than a year after treatment. There were two deaths among the 1,200 cases of the nearly four years since salvarsan was introduced; one patient died from embolism, one from a dermatitis with ulcerative enteritis and stomatitis. Both had been given intensive preliminary treatment with mercury and then three injections of salvarsan. There was no disturbance in vision or hearing in any instance. In obstinate cases of meningocerebral syphilis, that is, with moderately severe changes in the fluid, he treats by endolumbal injections every third week of 6 or 8 c.c. of a solution of 0.15 c.c. neosalvarsan in 300 c.c. of physiologic salt solution diluted one-half with cerebrospinal fluid. His experience with sixty-seven of these endolumbal injections has been very favorable. He says that it has proved a weapon against syphilis such as we have never had before. The greatest progress, however, has been realized in aborting the disease; this can be done now in six months at most and in his experience the cure has proved durable in 94 or 97 per cent. of the cases. Seventeen of the men contracted the disease anew from three months to three years after all tests had shown them to be completely cured.

93. **Mode of Action of Mercury and Salvarsan.**—Schreiber's pharmacologic and clinical research, he states, has shown that mercury and salvarsan complete each other. The salvarsan kills all the spirochetes it can reach while the mercury promotes the immunity reactions.

94. **Salvarsan in Syphilis of the Central Nervous System.**—Dreyfus has made 3,000 intravenous injections of the salvarsan preparations in 250 patients and has had but one mishap. This was early in his experience and it had a favorable outcome at last. He combines the salvarsan with mercury and iodid, and has had very encouraging results to date in numbers of the cases. He enters into full particulars of indications and cases. With tertiary cerebrospinal syphilis he says that negative findings in the fluid show that nothing can be hoped from treatment. The lesion is already arrested and irreparable changes are installed, with rare exceptions.

Iwaschenzoff reports experiences with 130 cases which confirm, he says, the undoubted benefit from salvarsan in cerebrospinal syphilis. He advises to begin with small doses. Among 39 patients with myelitis, 8 were practically and 11 nearly cured; 4 had some of their symptoms retrogress; no benefit was apparent in 14; the condition grew worse in 1 patient and another patient died. In the fatal case, if the interval between the injections had been longer (seven days) possibly the focal reaction might have subsided more completely.

95. **Treatment of Syphilis.**—Leredde insists that treatment to be effectual must be begun very early and be vigorous and prolonged, the patient kept under medical supervision for years. He states that some of his tabetic patients have had thirty or even forty injections of salvarsan or neosalvarsan, and the Wassermann reaction and cerebrospinal findings finally became negative and the tabes seems to be permanently arrested.

96. **Subcutaneous Injection of Neosalvarsan.**—Wechselmann and Eicke wonder that more do not adopt the technic which they have applied in so many cases that they have now a record of 7,000 such injections. The important point is to deposit the fluid actually on the fascia. They have dropped mercury completely for years in treatment of syphilis, and claim that their results are superior to those of others who still cling to mercury. Six typical cases are tabulated to show the actual results.

97. **Intravenous Injections of Neosalvarsan.**—Katzenstein emphasizes that we cannot expect to eradicate the spirochetes entirely at one course of treatment when the cerebrospinal nervous system is already involved. Treatment must be resumed again and again. He adds further that the Wassermann reaction is chiefly important for the knowledge it imparts that syphilis is still lurking in the system when all symptoms have subsided.

102. **Reply to Criticism of Dialysis Serodiagnosis.**—Abderhalden replies to Flatow, Kämmerer and others, pointing out special features in their published technics which show that they misunderstand the principle of the method, and hence that their findings cannot be compared with those obtained with his technic.

Wiener klinische Wochenschrift

March 5, XXVII, No. 9, pp. 197-220

104 Infantile Scorbutus. W. Wernstedt.
105 Production of Special Precipitins in Artificial Cultivation of Tissues. P. Przygode.
106 Extensive Gap in Tendon in Forearm Bridged with Fascia. (Fall von ausgedehntem Sehnensersatze durch freier Faszientransplantation.) J. Gobiet.
107 *Necessity for Modifying the Blood in Treatment of Cancer. (Die Lehre von der humoralen Entstehung der Karzinome und der Einfluss dieser Lehre auf die Therapie.) A. Theilhaber.
108 Pathogenicity of Capsule Bacilli. D. Natonek.

March 5, No. 10, pp. 221-260

109 Importance of Roentgenotherapy for Internal Medicine. G. Forssell.
110 The Meiostagmin Reaction. L. Arzt and S. Zarzycki.
111 Acute Ulceration of the Vulva. S. Grosz and R. Volk.
112 *Segregating the Blood in the Limbs in Treatment of Cardiovascular Disturbances. (Behandlung der Zirkulationsstörungen mit "Abschnürung der Glieder" und "Phlebostase.") J. Tornai.
113 Symptoms of Uremia with Kidney Disease. J. Feldner.
114 Prophylaxis of Plague at Trieste. M. Gioseffi.

107. **Importance of Modifying the Blood in Malignant Disease.**—Theilhaber has been proclaiming for five years that among the factors contributing to cancer, some change in the juices of the body is evidently of importance, and that in treatment all should be done to improve the condition of the blood and blood-producing organs and also to improve the circulation through the region of the cancer. He is convinced that the insufficiently oxidized and injurious products of metabolism accumulating in the body play an important part in the development of myomas. The defective functioning of the blood-producing organs cooperate in the production of cancer, as in these abnormal conditions the antibodies which should be on hand to protect the tissues are not produced in adequate amounts. This is one reason why the predisposition to cancer increases in the elderly, as their blood-producing organs are becoming atrophied. On this factor are superposed the poverty of cells and the defective blood-supply in the connective tissue, anemia of this kind being found an invariable precursor of cancer. These same causes, poor blood-supply and scanty cells, are often the cause of recurrence after radical removal of the cancer. Research has been reported which showed that the predisposition to cancer in animals was materially enhanced by removal of the spleen, while it was reduced by removal of testicles and ovaries. Animals already bearing cancer showed unusually rapid growth of the process after splenectomy. Venesection, by stimulating blood production, aids in warding off recurrence of cancer in animals (Fichera and Cimeroni). Theilhaber thinks that any method is doomed to failure which leaves out of account the abnormal condition of the body fluids. He makes a point of applying diathermia, that is, heat in the depths by electricity as a preliminary to roentgenotherapy. He applies it to the cancer and also to the spleen in order to stimulate the blood production. He supplements this by injection of thymus, uterus and spleen extracts. These organ juices stimulate the functioning of the blood-producing organs and induce strong leukocytosis. At the same time they seem to have a cytolytic action on cancer cells. He has been using thymus and uterus extract for four years and his experiences have shown that by the above combined measures cancer can be favorably influenced. The pain and bleeding diminished, many inoperable tumors subsided and some disappeared entirely. As antibodies develop it is wise to change the measures occasionally. The injections of uterus extract at first abolished the pains, reduced the discharge and improved the general health; after a few months what was left of the cancer seemed to reach a stationary phase and no further influence on it was evident. Changing then to spleen extract, was followed by renewed improvement, or vice versa. As these injections are effectual in palliative treatment of inoperable cancer, and prevention of occurrence, even without radiotherapy, they can be placed in the hands of the general practitioner as means with which he can hope to prevent recurrence after operation, improve inoperable cancers, and cure them completely in many cases. The circumstance that the genital glands seemed to favor the growth of the malignant tumors, has led him to supplement the above measures by means to induce the ovaries to atrophy, that is, by exposure to the Roentgen rays. He adds that exposure of the testicles might have a similar favorable effect in cancer in man.

112. **Segregation of the Blood in the Limbs as Therapeutic Measure in Heart Disease.**—Tornai remarks that this measure is proving more and more satisfactory and a powerful aid in relieving the heart of a large part of its work for an hour or so morning and afternoon, giving it a chance to recuperate in comparative peace. It is only three years since he called attention to the advantages of this means of combatting congestions but the method has been widely adopted since. It has been applied to a hundred patients with disturbances in the circulation at the university medical clinic at Budapest, where he is assistant. He gives several illustrations of the broad band and automatic U buckle which he uses, applying constriction to the four limbs at once.

Zeitschrift für Kinderheilkunde, Berlin

X, Nos. 2-4, pp. 81-353. Last indexed March 7, p. 819

115 Necropsy Reports on Four Infants. (Kasuistik aus der Pathologie des Säuglingsalters.) O. Reimch.
116 So-Called Rumination in Infants. J. C. Schippers.
117 Rosenbach's Tuberculin in Tuberculosis in Children. C. Beck.
118 Case of Webbed Fingers and Toes and Deformity of the Ears. (Fall von Arachnodaktylie mit Schwimmhautbildung und einer eigenartigen Ohrmuscheldeformität.) E. Thomas.
119 Symmetrical Progressive Loss of Flesh in Children. J. Husler.
120 Physiology of Suckling. H. Barth.
121 Histologic and Cytologic Examination of the Bone-Marrow of Infants. M. L. Mayerhofer.
122 Disturbances in Nutrition of Infants from Excess of Albumin. (Der Eiweissnährschaden des Säuglings.) E. Benjamin.
123 Nutrition Experiments with Friedenthal's Milk. N. Bahrdt.

Zentralblatt für Chirurgie, Leipsic

March 14, XLI, No. 11, pp. 465-496

124 Implanting Nerve in Muscle. (Die direkte Einpflanzung des Nerven in den Muskel.) Heineke.
125 Etiology of Appendicitis. A. Simin.

Zentralblatt für Gynäkologie, Leipsic

March 14, XXXVIII, No. 11, pp. 393-424

126 *Roentgenotherapy of Myoma. (Versuche, die Hellungsdauer bei der Myombehandlung durch Steigerung der verabreichten Röntgenmengen noch weiter abzukürzen.) E. v. Graff.
127 *Radiotherapy of Uterine Cancer and Hemorrhage. L. Landau and E. Kaufmann.
128 Instrumental Dilatation of the Cervix. (Ein neues Dilatationsinstrument.) G. Grotte.

126. **Roentgenotherapy of Myoma.**—Graff reports experiments with various technics, especially attempts to enhance the effect and shorten the course of treatment by increasing the dosage and the number of points for cross-fire. The best results seem to be obtained with cross-fire from eight or ten points, each covering considerable area.

127. **Radio-Active Substances in Treatment of Uterine Cancer and Hemorrhage.**—Landau shrinks from radiotherapy alone for an operable uterine cancer. He says that vaginal hysterectomy must not be burdened with the mortality from abdominal hysterectomy. By crushing the tissues each side of the uterus, a broad strip becomes necrotic and microscopic germs in it are killed. He has found metastatic nodules in the fundus of the uterus, unreachable by the rays, while the thickened uterus walls interfere with the penetration and action of the rays. When the uterus is removed through the vagina, the tissues each side can be rendered necrotic and the stumps brought down and sutured in the vagina, thus rendering the deeper tissues accessible to the rays.

Kaufmann reports a case every particular of which seemed to indicate a bleeding uterine myoma. Both tubes and ovaries could be felt of normal size and consistency. Roentgenotherapy was advised but the patient preferred operative treatment to hasten her return to her distant home. So at her wish the abdomen was opened. Instead of the expected myoma, an extra-uterine pregnancy was found, adherent to the exterior of the uterus; both tubes and ovaries were sound. The ovum was intact. The case impresses anew the necessity for caution with radiotherapy in gynecology. The disastrous consequences that would have followed mere radiotherapy in this case are obvious.

Gazzetta degli Ospedali e delle Cliniche, Milan

XXXV, Nos. 30-33, pp. 313-352

129 Importance of Institutional Care for the Tuberculous. (Alcune osservazione intorno a la vita nosocomiale dei tubercolosi.) D. Soldi.
130 Action on the Kidneys of Spinal Anesthesia. (Azione sul rene della rachianestesia novocainica e tropococainica.) R. Mosti.

Riforma Medica, Naples

March 7, XXX, No. 10, pp. 253-280

131 Echinococcus Disease. (Contributo allo studio delle cisticercosi.) V. Aloi.
132 Value of Wright's Serodiagnosis. L. Ferro.

Brazil-Medico, Rio de Janeiro

February, XXVIII, No. 8, pp. 71-80

133 *Reliability and Convenience of Ambard's Formula for Estimation of Kidney Functioning. (A proposito da constante de Ambard.) N. Barbosa. Commenced in No. 7.

133. **Ambard's "Uremic Constant."**—Barbosa adds his testimony to the value of this method of estimating the functional capacity of the kidneys. It was described in these columns March 7, 1914, p. 813.

St. Petersburger medizinische Zeitschrift

March 1, XXXIX, No. 5, pp. 61-72

134 Purulent Ascites Causing No Symptoms with Carcinosis of the Peritoneum. B. Ottow.
135 Chronic Cystic Mastitis. A. Bertels.
136 Massage of the Head and Neck Often Useful. F. Klau.
137 Inherited and Familial Tendency to Masturbation. J. B. J. Zimkin.

Hospitalstidende, Copenhagen

March 11, LVII, No. 10, pp. 289-320

138 *Operative Treatment of Internal Echinococcus Disease. G. Magnusson. Commenced in No. 9.
139 Improved Hemoglobin Scale. (Hæmoglobinbestemmelsesmetoder og Forslag til en saadan.) N. L. Petersen.

138. **Treatment of Echinococcus Disease.**—Magnusson discusses the various technics called for by different locations and varying conditions in individual cases, the aim in all being to destroy the parasites first, possibly with formaldehyd, and then suture the lips of the cyst to the wound, supplementing this marsupialization by finally burying the closed capsule. It may be necessary to attack the cyst both from the rear and the front, especially with kidney cysts or multiple cysts anywhere.

Ugeskrift for Læger, Copenhagen

February 5, LXXVI, No. 6, pp. 229-268

140 Electrocardiography. L. S. Fridericia.

March 5, No. 10, pp. 406-456

141 *Deforming Osteochondritis of the Hip-Joint in the Young. P. F. Møller.

March 12, No. 11, pp. 457-492

142 Retention of Membranes with Delivery at Term. (Retention af Aeghinderne ved den rettetidige Fødsel.) P. Gulidal.
143 Amputation with Diabetic Gangrene. A. Trolle.

141. **Deforming Osteochondritis in the Young.**—Møller states that attention has been called to this affection only recently. The youngest patient in the 27 cases on record was over 3, the oldest 13. Boys are more frequently affected than girls, and the trouble affects usually only one hip-joint. Swelling and pain in the joint may be the first symptoms but in 8 of Perthes' 15 cases there was no pain; in the others there was mild pain, at times, radiating to the knee. In Møller's 2 cases one child complained of pain at first, but it disappeared under treatment, and the other had no pain. In all the cases—and this is an important point in differentiation—the children ran around with their mates and made no effort to spare that leg, even when there was some tendency to pain in it. The gait may suggest that of congenital dislocation of the hip-joint, the body tilts when the patient steps on the leg affected and—most important of all—active and passive bending of the leg causes no disturbance but abduction is almost impossible while adduction and rotation are restricted in varying degrees but seldom very pronounced. The limb can be flexed without the least pain but occasionally there is transient tenderness at the line of the joint. This was marked in one of his cases but in none of Perthes'. There is no crepitation but a slight tendency to atrophy of muscles may develop in time.

The roentgenograms given show that the findings are specific and pathognomonic. They suggest an infectious process developing at a point of lessened resistance from mechanical irritation or disturbance in the blood-supply. The hindrance to abduction seems to disappear under general anesthesia, so that this may be ascribed to muscular contraction. The difficulty in abduction and the restricted rotation and adduction soon reach their highest point and then persist unmodified for months or years. Then the affection gradually heals and the gait becomes normal once more. The trouble has certain features which distinguish it from mere deforming arthritis. The process seems to develop in the interior of the head of the femur and, unlike deforming arthritis, in time progresses to a spontaneous cure with restoration of joint function. There is no doubt that many cases of this kind have been treated for tuberculous coxitis, and the final recovery has been credited to the treatment applied. Even when the child gives a positive tuberculin reaction, this need not indicate that the affection in question is of tuberculous origin. The dystrophic changes which always accompany tuberculous coxitis are not apparent in the roentgenograms, and the bone changes of tuberculosis never appear. As the affection in question does not spread, it seems probable that it may originate in some nutritional disturbance in the region, some lesion of an artery interfering with the normal blood-supply. A history of trauma was known in 11 of the 27 cases he analyzes. No signs of rachitis were found in the majority and nothing to indicate inherited syphilis in any instance. Treatment must be restricted to massage and measures to prevent atrophy, especially of the abductors. Only when there is excessive pain or deformity are operative measures justified.